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 Equipments 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 2018 is as followed：

Unit：NT 1,000s

Items	Net Revenue 2018	Revenue Proportion
Packaging Service	41,798,047	61.43%
Testing Service	15,994,776	23.51%
Wafer Level Packaging	3,723,157	5.47%
Wafer Level Testing	6,096,499	8.96%
Others	426,900	0.63%
Total	68,039,379	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) Copper Piller Bump (CPB) Wafer testing services

(12) System-in-Packag (SiP) packaging services

(13) Redistribution Layer (RDL) services

(14) Wafer Level Chip Scale Package (WLCSP) packaging services

(15) Package on Package / Package in Package(PoP, PiP) packaging and testing services

(16) Micro-electro-mechanical systems (MEMS) packaging services

(17) CMOS Image Sensor (CIS)packaging and testing services

(18) Flip-Chip Chip Scale Package (FC CSP) Packaging Services

(19) Packaging service with laminate substrate

(20) Through-Mold-Via (TMV) Technology development for chip-stacking requirement in packaging services

(21) Copper Pillar Bump Flip Chip (Cu Pillar Bump Flip Chip) packaging services

(22) CMOS Image Sensor (CIS) packaging services

(23) Electro Magnetic Interference (EMI) shield package packaging services

(24) Fan-Out Wafer Level (FOWLP) packaging and testing services

(25) Fan-Out Panel Level (FOPLP) packaging and testing services

(26) LPDDR3 KGD testing services

4. Product/Service in Development：

(1)3D/2.5D IC advanced packaging for high performance computing devices on IoT or AI related.

(2)Fan-Out System in Package (FOSiP) for heterogeneous integration in post Moore era.

(3)Redistribution Layer (RDL) using fine line and space (2/2 um) for high performance, high I/O, and high bandwidth heterogeneous integration packaging.

(4)Fan-out CIS (CMOS Image Sensor) on bio chips packaging.

(5)Partial mold and compartmental EMI shielding packaging for 5G Antenna related packages.

(6)Fine pitch (100 um) tin bumping technology

(7)Wafer grinding (<30um) and die stacking for high performance memory products

(8)Ultra thin wire bound and flip-chip packaging

(9)UFS3.0 System Level testing technology and hardware development

(10) PCIe Gen4 System Level testing technology and hardware development

(11) Oven wide low temperature testing services

(12) ONFI 4.1 Higher Speed NAND testing services and hardware development

(13) 5G products testing services and hardware development

(14) Thin package testing services and hardware development

(15) Fine pitch COK development

2. Industry Summary

1. Current Industry Status & Outlook

According to World Economic Outlook Report published by the International Monetary Foundation (IMF) in January 2019, Global GDP in 2018 grew 3.7%. The IMF also revised down World Economic Growth Rate in 2019 and 2020 at 3.5% and 3.6% while acknowledging risks from factors such as trade tension between US and China, impacts from UK Brexit, and slower than expected China economy growth . Three month later, IMF further revised down its 2019 World Economic Growth Rate to 3.3%, including US economic revised from 2.5% to 2.3%, Eurozone revised from 1.6% to 1.3%, Japanese revised from 1.1% to 1.0%. In the meantime Chinese economic revised upwards from 6.2% to 6.3%.

As global macroeconomic going through down cycle, international market research organization Gartner revised its 2018 global semiconductor market down from 21.6% in early 2019 to 13.4%. Global semiconductor market scaled reached US$477.0 billion in 2018. Gartner forecasted 2.6% growth in global semiconductor market in 2019. Growth is forecasted to slow down over the next 3 years with forecasted growth rate at 8.1% in 2020, -1.8% in 2021 and 3.8% in 2022. By 2020, global semiconductor market scale is estimated to be over US$ 500.0 billion.

Taiwanese semiconductor industrial structure has gradually developed into vertical chain of supply starting at foundry level. Supply chain includes IC Design, IC manufacturing, IC packaging and IC testing. Due to vertical chain of supply and industrial clustering effect Taiwanese IC industry consist primarily of IC manufacturing sector, mainly Wafer foundries and DRAM manufacturing. This also gives Taiwanese IC industry competitive advantage with flexibility and speed and cost.

According to the Industrial Economics & Knowledge (IEK) published by Industrial Technology Research Institute, overall output value of Taiwanese IC industry (including IC design, IC manufacturing, IC packaging, IC testing) reached NT$687.0 billion (US$22.7 billion) in 4Q18 which decline 0.7% from previous quarter (3Q18) and 1.7% from same period last year (4Q17). Output Value of IC Design sector was NT$164.3 billion (US$ 5.4billion), showing 7.5% decline from previous quarter (3Q18) and 2.2% growth from same period last year (4Q17). Output value of IC manufacturing sector was NT$ 393.7 billion (US$13.0 billion),

growing 3.2% from previous quarter (3Q18) and 1.2% from same period last year (4Q17). Output value of Wafer foundries were NT$349.7 billion (US$11.6 billion), growing 7.2% from previous quarter (3Q18) and 2.0% from same period last year (4Q17). Output value of memory and other manufacturing was NT$44.0 billion (US$1.5billion), decline 20.4% from previous quarter (3Q18) and decline 4.3% from same period last year (4Q17). Output value of IC packaging sector was NT$89.0billion (US$2.9billion) decline 4.3% from previous quarter (3Q18) and grow 2.3% from the same period last year (4Q17). Output value of IC testing sector was NT$40.0billion (US$1.3billion), growing 1.8% from previous quarter (3Q18) and 3.4% from the same period last year (4Q17). (Figures calculated based exchange rate of 1 USD= 30.2 NTD).

Unit：NT $billions

	1Q18	Quarterly Growth	YoY Growth	2Q18	Quarterly Growth	YoY Growth	3Q18	Quarterly Growth	YoY Growth	4Q18	Quarterly Growth	YoY Growth	2018	Annual Growth
Overall Output Value	6,032	-10.7%	5.6%	6,382	5.8%	11.5%	6,915	8.4%	7.6%	6,870	-0.7%	1.7%	26,199	6.4%
IC Design	1,372	-14.7%	-1.9%	1,622	18.2%	7.7%	1,776	9.5%	7.1%	1,643	-7.5%	2.2%	6,413	3.9%
IC Manufacturing	3,573	-8.1%	11.4%	3,530	-1.2%	15.4%	3,816	8.1%	8.3%	3,937	3.2%	1.2%	14,856	8.6%
Wafer Foundries	3,104	-9.5%	9.0%	2,987	-3.8%	11.5%	3,263	9.2%	5.1%	3,497	7.2%	2.0%	12,851	6.6%
Memory & Other	469	2.0%	30.6%	543	15.8%	42.1%	553	1.8%	31.7%	440	-20.4%	-4.3%	2,005	23.7%
IC Packaging	755	-13.2%	-1.9%	870	15.2%	5.5%	930	6.9%	7.5%	890	-4.3%	2.3%	3,445	3.5%
IC Testing	332	-14.2%	-1.8%	360	8.4%	7.5%	393	9.2%	3.4%	400	1.8%	3.4%	1,485	3.1%
IC Product Output	1,841	-11.0%	4.8%	2,165	17.6%	14.7%	2,329	7.6%	12.0%	2,083	-10.6%	0.7%	8,418	8.0%
Overall Global Semiconductor Growth	-	-	-	-	-	-	-	-	-	-	-	-	4,688	13.7%

Source：TSIA；Industrial Technology Research Institute (2019/02)

According to the Industrial Economics & Knowledge (IEK) published by Industrial Technology Research Institute, overall output value of Taiwanese IC industry in 2018 reached NT$2,619.9 billion (US$86.8 billion), growing 6.4% from 2017. Output value of IC design sector was NT$641.3 billion, (US$21.2billion), growing 3.9% from 2017. Output value of IC manufacturing sector was NT$1,485.6 billion, (US$49.2 billion), growing 8.6% from 2017. Output value of wafer foundries was NT$1,285.1 billion, (US$42.6billion), growing 6.6% from 2017. Output value of memory and other manufacturers was NT $200.5 billion, (US$6.6billion), growing 23.7% from 2017. Output value of IC packaging sector was NT$344.5 billion, (US$11.4 billion), growing 3.5% from 2017. Output value of IC testing sector was NT $148.5 billion, (US$4.9 billion), growing 3.1% from 2017. (Figures calculated based exchange rate of 1 USD= 30.2 NTD).

Output Value of Taiwan IC Industry 2015~2019

Unit：NT $billion

	2015	Annual Growth	2016	Annual Growth	2017	Annual Growth	2018	Annual Growth	2019(E)	Annual Growth (E)
IC industry	22,640	2.8%	24,493	8.2%	24,623	0.5%	26,199	6.4%	26,445	0.9%
IC Design	5,927	2.8%	6,531	10.2%	6,171	-5.5%	6,413	3.9%	6,675	4.1%
IC Manufacturing	12,300	4.9%	13,324	8.3%	13,682	2.7%	14,856	8.6%	14,820	-0.2%
Wafer Foundries	10,093	20.4%	11,487	13.8%	12,061	5.0%	12,851	6.6%	12,943	0.7%
Memory & Other	2,207	-14.8%	1,837	-16.8%	1,621	-11.8%	2,005	23.7%	1,877	-6.4%
IC Packaging	3,099	-1.9%	3,238	4.5%	3,330	2.8%	3,445	3.5%	3,460	0.4%
IC Testing	1,314	-4.7%	1,400	6.5%	1,440	2.9%	1,485	3.1%	1,490	0.3%
IC Product Output	8,134	-2.6%	8,368	2.9%	7,792	-6.9%	8,418	8.0%	8,552	1.6%
Global Semiconductor Growth	3,352	-0.2%	3,389	1.1%	4,122	21.6%	4,688	13.7%	4,545	-3.0%

Source：TSIA；Industrial Technology Research Institute IEK(2019/02). Note: (E) represent estimated value.

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.

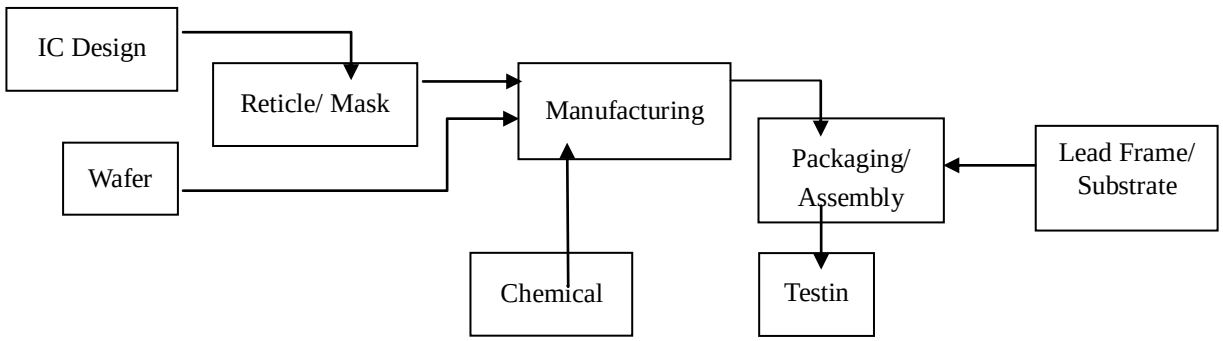
(2) Mid-stream：

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.

While System on Chip (SoC) and System in Package (SiP) are currently the two major direction of development in Semiconductor Assembly and Packaging technologies, System in Chip (SoC) technology has reached a stage of bottleneck. As SoC faces difficulties such as high defect rate, extensive development time and high cost, SiP multi chip module package with advantages such as small profile, high speed and frequency, lower lost and shorter production lead time becomes highly valued solution. As semiconductor

micro-manufacturing technologies and IC production cost reaches bottleneck, relevance of Moore's Law is gradually reaching its limit of applicability. In addition, end-product for Internet of Things also emphasizes heterogeneous integration of different components such as Sensor, Logic/Dram, GPU and other IoT Product applications. Consequently utilizing SiP technology to achieve heterogeneous integration through assembly, particularly integration of sensor units that SoC struggles to achieve, becomes popular areas of research and development. Based on its production process of Wafer-level SiP Assembly and Packaging (e.g. CoWos, InFO package) wafer foundry TSMC is currently leading the movement towards Fan-Out packaging utilized in smart phone application. More than 20% thinner than traditional Flip Chip assembly, fan out packaging matches the trend of increasingly slim profile of smart phones. In addition, Fan-Out packaging also offers advantages in higher performance, low power consumption and better thermal management than Flip Chip packaging. Furthermore, its lower cost also fulfils consumer demands for lower price in electronic devices. The above factors indicate that Fan-Out packaging technologies will become the mainstream for smart phone applications. With exception of TSMC, most wafer foundries choose to collaborate with closely cooperating OSAT service providers in product development. IDM manufacturers also collaborate with OSAT service providers in product design and development. This creates increasingly close integration of assembly and OSAT service providers, wafer foundries, and IDM manufacturers.

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.

(3) State of Competition：

2018 Global semiconductor industry value grew 10% from 2017 reached a record high of

US$460 billion driven by memory pricing base on Digitimes research. 2019 is going to be a challenge year for semiconductor revenue growth due to weak demand and pricing of memory IC and uncertainty from trade tension between US and China. 2018 IC packaging industry grew 3.8% from 2017 reached US$55.3 billion, including OSAT packaging grew 7.5% and reached US$31.1 billion. OSAT packaging weight increased from 54.4% in 2017 to 56.3% in 2018. Advanced packaging is going to have a booming growth rate in 2018 with expectations of heterogeneous integration applications for Big Data, AI, 5G, High Performance Computing (HPC), IoT, smart car, and etc., despite it only represented a small portion of overall packaging.

2018 packaging revenue among top 10 OSAT grew 5.5% which was lower than industry 7.5% growth. 2018 OSAT revenue accounted for 75.9% of the industry which were 1.2% less from 77.1% in 2017. ASE Technology Holding Co. Ltd. and Amkor Technology, Inc.(Amkor), top 2 OSAT players, 2018 revenues grew less than 3% due to weak smartpone demand. King Yuan Electronics Co. Ltd. and ChioMOS Technologies Inc also faced similar market challenges as top OSAT players. United Test and Assembly Center Ltd. (UTAC) closed its Shanghai operations and its 2018 revenue drop 10% at US$7.87 billion. China top 3 OSAT players, Jiangsu Changjiang Electronics Technology Co. Ltd.(JCET), Tianshui Huatian Technology Co. Ltd.(TSHT), and Nantong Fujitsu Microelectronics Co. Ltd., accounted for a record high 26.2% of 2018 top 10 OSAT revenue which grew 1.5% from 24.7% in 217. 3 Chinese OSAT players 2018 revenue grew 7-14%. Powertech Technology Inc.(PTI) and Chipbond Technology Corp. revenue growth were higher than China OSAT players. PTI 2018 major revenue growth drivers were from acquisition of Tera Probe, Inc. and Micron Akita operations. 2018 Chipbond revenue growth driven by smartphone OLED panel driver IC package converted to Chip on Film (COF) packages. Increasing penetration of Touch and Display Driver Integration (TDDI) has provided the biggest revenue growth momentum for Chipbond among global OSAT players in 2018.

3 major China OSAT players have elevated their rankings to top 10 by mergers and acquisitions since 2015. Amkor strategic acquired NANIUM S.A.to strength its Wafer-Level Packaging (WLP) capability in Feb 2017. PTI acquired 100% Akita operations and 39.6% of Tera Probe, Inc. from Micron Technology, Inc. in 2017 to expand its operations in Japan. Sigurd Microelectronics Corporation acquired Bloomeria Limited and became major shareholder of Winstek Semiconductor Technology Co. Ltd. which expended its services from testing only to turn-key solutions including WLP and chip probing. Ardentec Corporation expanded into radio frequency testing services for automobile devices through the acquisition of Giga Solution Tech Co. Ltd. in Aug 2017. TSHT acquired Unisem (M) Berhad in Sep 2018 to expend western customer base and reduce the impact of US-China

trade war.

Annual growth of Taiwanese IC OSAT companies can be categorized according to principle revenue product including logic, memory, driver IC, Analog IC, Sensors and testing.

Taiwan IC packaging and testing industry remained positive annual growth for 2017 and second half of 2018 growth slowdown from weak macroeconomic and uncertainty of US-China trade tension. Logic IC demand picked up in 2Q18 and 3Q18 for SiP and WLP, but slowdown in 4Q18. PTI's memory IC demand had been strong since 1Q16 and improved quarter after quarter. PTI 3Q17 stronger than industry growth contributed from acquisition of Tera Probe, Inc. and Micron Akita operations.

PTI has been devoted on product mix diversification especially after the weaken PC demand, saturated smartphone market, highly consolidated upstream customers. The acquisition of Greatek Electronic Inc. in 2012 enhanced PTI exposure to Logic IC products packaging and testing services. In addition to the acquisition of Greatek and Tera Probe, Inc., PTI organic growth came from the growing demand of mobile DRAM, server DRAM, Graphic RAM, NAND Flash, Solid State Drive (SSD), MCP/MMC, and market share gain of commodity DRAM in Xian. PTI consolidated revenue grew 6.2% for 2015, 13.7% for 2016, and 23.4% for 2017.

Annual Growth 2013-2018 of Taiwan OSAT Companies Ranking Among Global Top 10

Unit：NT million

Year	2018	18/17	2017	17/16	2016	16/15	2015	15/14	2014	14/13	2013
Company	Revenue	Annual Growth	Revenue	Annual Growth	Revenue	Annual Growth	Revenue	Annual Growth	Revenue	Annual Growth	Revenue
ASE	397,261	6.0%	290,441	5.7%	274,884	-3.0%	283,302	10.0%	256,591	16.7%	219,862
PTI	68,039	14.1%	59,632	23.4%	48,344	13.7%	42,524	6.2%	40,039	6.5%	37,605
KYEC	20,816	5.7%	19,686	-2.0%	20,081	17.2%	17,129	5.2%	16,278	10.7%	14,694
Chipbond	18,725	16.4%	18,428	6.8%	17,256	2.3%	16,863	-4.6%	17.683	11.8%	15.811
ChipMOS	18,480	3.0%	17,941	-7.5%	19,392	-2.4%	19,869	-9.7%	22,005	13.7%	19,362

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

For Semiconductor backend companies, collaboration with strategic partners possessing leading advantage in technology and production cost enables long term supply chain partnership while securing stable business and profit in the oligopolistic DRAM and Flash market. PTI strives to establish and maintain solid strategic relations with customer while focusing on market segmentation. Currently our primary customers consist of best-known international semiconductor companies in memory manufacturing. Considering risks of price fluctuation due to excess capacity caused by over investment in memory market, PTI also expanded its business scope in 2008 into integrated advanced assembly and

packaging services (SiP, MCP, 3D IC, Bumping, Flip Chip MEMS, Fan out, TSV CMOS…). Based on its fundamental advantage in memory assembly and testing, PTI aim to integrate multiple functions such as logic, wireless, wired and micro-processing unit within a single package to provide high performance and small profile solutions. PTI also continues to emphasize UPH, increasing production efficiency while lowering production cost.

(3) Summary of Technological Research & Development

1.R&D Cost

Latest Annual R&D expenditure as followed

Unit：NT thousands

Item \ Year	2018
R&D Expenditure	1,864,218

2. Successfully developed technology or product：

I. Packaging Solution Achievements:

A. Achievements in diversify Fan-Out Panel Level packaging products：

(1) CHIEFS® packaging solution with chip first technologies, ideal forAPU, BB, ASIC, PMIC, Memory, and etc. packages

(2) CLIP® packaging solution with chip last technologies to enhance reliability, ideal for CPU, GPU, FPGA, and etc. packages

(3) PiFO® packaging solution with chip middle technologies to connect RDL routes on the sides of Cu pillar, ideal for RF module, Sensor, APU, die stacking, packaging stacking, or Fan-out SiP packages

(4) BF2O® packaging solution with bump free fan out and multiple layer redistribution technologies, ideal for PMIC, audio, PA, and etc. packages

B. Developing Antenna in Package (AiP) products using laminated substrate and Fan-Out Panel Level Package (FOPLP) technology with Low Dk & Low Df materials as 5G product solutions

C. Developing Fan-out on substrate solutions to replace 2.5D Si interposer

D. 8 die stacking on High Bandwidth Memory (HBM) products using Through Silicon Via (TSV) technologies

E. Non Conductive Film (NCF) used on HBM product packages

F. Developing combination of wires and Flip Chip packaging technologies for stacking of high density products

G. Developing ultra fine ball pitch 0.23mm BGA packaging solutions for high ball counts packages

H. Developing 16 die stacking Mobile DRAM packages to meet space constrain requirements

II. Testing Solution Achievements:

A. B6700D burn-in oven BI testing services with software and hardware development

B. UFS2.1 system level testing services with software and hardware development

C. Automotive IC testing services

D. T5503HS 4.5Gbps testing with software and hardware development

E. T5383 chip probing services

F. Testing socket mold-type development

(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) Actively expand product capacity while developing new technologies and production process

In response to persistent growth in semiconductor market and customer demand, we will continue to actively expand our capacity. We will also increase our competitive advantage by emphasizing on developing new technology and production process such as WLP, FC, SiP/Modules, 2.5D/3D IC, Fan-Out and other advance packaging technologies in accordance with product development trend.

(1) 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.

(2) 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.

(3) 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) Increase investment in automated equipment, accelerate automated production, improve production yield, increase production efficiency and reduce manpower dependence.

(3) Continue to develop new assembly, packaging and testing technology and new customer

As semiconductor moves beyond micrometer and enters the era of nanometer, demand for advance technology in IC assembly, packaging and testing continues to grow rapidly due to increase in function diversity and decrease in size profile. PTI established out research and

development facility dedicated to advance assembly and packaging technology in order to satisfy demand from existing and new customers and continues to strengthen our competitive advantage.

(4) 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

Our primary business scope includes providing IC outsourced assembly and testing (OSAT) services in overseas as well as domestic market. As of 2018 revenue from domestic sales account for 20.21% of overall revenue while that of overseas markets account for 79.79%. Our principle markets are Japan, Singapore, and North America.

Unit：NT Thousands

Year / Market	2017	%	2018	%
Domestic	12,170,505	20.41	13,752,607	20.21
Export	47,461,578	79.59	54,286,772	79.79
Japan	20,422,543		22,270,182	
Singapore	12,857,749		14,947,281	
North America	10,618,829		13,167,078	
Europe	1,842,106		2,052,881	
China and Hong Kong	1,404,213		1,381,878	
Others	316,138		467,472	
Total	59,632,083	100	68,039,379	100

2. Market Share：

According to data provided by Gartner, PTI is the 4^{h} largest OSAT service provider worldwide in 2018. It is also ranked 2nd in revenue among OSAT service providers in Taiwan. Currently there are over 30 domestic OSAT service providers respectively, of which 20 provides both assembly and testing services. According to 2018 operation results of Taiwanese IC industry published by Taiwan Semiconductor Industry Association (TSIA) in February 2019, overall output value of IC Assembly sector amounts to approximately NT$344.5 billion while that of testing sector amounts to approximately NT$148.5 billion. In 2018, our assembly revenue amounts to approximately NT$ 45.6 billion, contributing 13.2% of overall industry output while testing revenue amounts to approximately NT $22.5 billion, contributing 15.5% to overall

industry output. In particular PTI also holds leadership position in assembly, packaging and testing of memory IC products. Powertech Semiconductor (Xian) Co. Ltd., a subsidiary established through investment contract with Micron Technology Inc. on semiconductor assembly, began production in 2016, increasing PTI's market share in memory OSAT sector. In 2017, PTI also reached agreement with Micron Technology Inc. to acquire its Akita facility in Japan as well as 39.6% share of Tera Probe, Inc. from Micron, consolidating PTI's position in Japan. Future applications of 5G, AI, bio tech, ADAS, smart city and IoT related products are going to create massive demand for FOPLP packages which drive PTI to invest heavily in Fan-Out Panel-Level Packaging (FOPLP).

3. Market Supply and Demand Outlook and Growth Potential

According to forecast by Garner in Jan 2019, overall sales value of global semiconductor market will grow by 2.6% annually in 2019. Garner also forecasted annual growth of 8.1% in 2020, decline 1.8% in 2021 and 3.8% annual growth in 2022 at US$539 billion.

Global Semiconductor Market Forecast

Unit: US $billions

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Global Semiconductor Market	3,154	3,424	3,349	3,459	4,204	4,770	4,890	5,280	5,190	5,390
Annual Growth Rate	5.2%	8.6%	-2.2%	3.3%	21.6%	13.4%	2.6%	8.1%	-1.8%	3.8%
Source： Gartner；Industrial Technology Research Institute (2019/01)										

Our primary source of revenue consists of assembly and testing of Memory IC products. We will continue to increase revenue from assembly and testing of Logic IC, sensor components and other products. The two mainstream product categories of memory markets consist of DRAM and Flash memory products. Semiconductor product categories include Application Specific Integrated Circuit (ASIC), Application Specific Standard Product (ASSP) Analog, Discrete Devices, GP logic, Memory, Micro-component, Sensor (NOS) and Optoelectronic components (Opto). In 2018, Memory (34.3%), ASSP (22.4%) and Micro-component (15.8%) were the largest product categories. Those three products will remain as the top 3 product categories and estimated to weight in as 27.7% for Memory, 25.1% for ASSP, and 16.0% for Micro-components. Highest growth devices among all semiconductor products are going to be optoelectronic components (Opto), sensor (NOS), and discrete devices with 9.4%, 7.4%, and 6.5% respectively CAGR for 2017-2020.

2017~2021 Sales Growth Forecast of Semiconductor Product Categories

Unit: US$billions

	2017			2018			2021		
	Volume	Proportion	Growth	Volume	Proportion	Growth	Volume	Proportion	2017~2022 CAGR
ASIC	25.6	6.1%	10.3%	27.8	5.9%	6.1%	33.4	6.2%	4.6%
ASSP	101.6	24.2%	11.0%	106.3	22.4%	5.1%	135.0	25.1%	6.0%
Analog	23.1	5.5%	11.9%	24.4	5.1%	7.5%	29.0	5.4%	5.2%
Discrete	20.1	4.8%	9.7%	22.7	4.8%	11.2%	27.4	5.1%	6.5%
GP Logic	12.2	2.9%	4.5%	13.5	2.8%	4.7%	16.1	3.0%	5.9%
Memory	131.8	31.4%	64.3%	162.8	34.3%	24.9%	149.0	27.7%	2.7%
Micro	66.3	15.8%	6.2%	74.8	15.8%	10.3%	86.4	16.0%	5.0%
NOS	10.5	2.5%	9.9%	10.5	2.2%	1.2%	15.0	2.8%	7.4%
Opto	29.0	6.9%	10.3%	31.9	6.7%	6.7%	47.2	8.8%	9.4%
Total	419.7	100.0%	22.2%	477.0	100.0%	13.4%	538.6	100.0%	6.3%

Source: Gartner；Organized by PTI

WSTS estimated 2019 global semiconductor value is going to decline 30% at US$454.5 billion, including 20% decline for memory products. Intel Corp. maybe able to claim the top one ranking among semiconductor players followed by Samsung Electronics Co. Ltd. and Taiwan Semiconductor Manufacturing Company Limited. US companies maintained as the leader of semiconductor industry from value added and technology leading position in 2019. US companies accounted for 40% of semiconductor market share and followed by Taiwan companies 20%. Korean companies fall in 3rd place affected by weak memory prices. Taiwan foundry accounted for 70% of global market and ranked Number 1 in the world. Taiwan IC packaging and testing accounted for 50% of global market and ranked Number 1 in the world.

According to IEK Consulting report, Taiwan semiconductor market value grew 6.4% at US$87 billion (NT$2,620 billion) in 2018 and increase 0.9% at US$88 billion (NT$2,640 billion) in 2019, better than global average. Future growth moment will focus on AI, IoT, 5G communication, Industrialization 4.0, smart machinery, smart car, VR/AR, HPC, software, networking services, and etc..

Taiwan IC packaging and testing industry will only grow 0.4% at US$16.5 million (NT$495 billion) due to weak macroeconomic, uncertainty from US-China trade tension, and soft Purchasing Managers Index (PMI).

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 enables 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.

(5) 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.

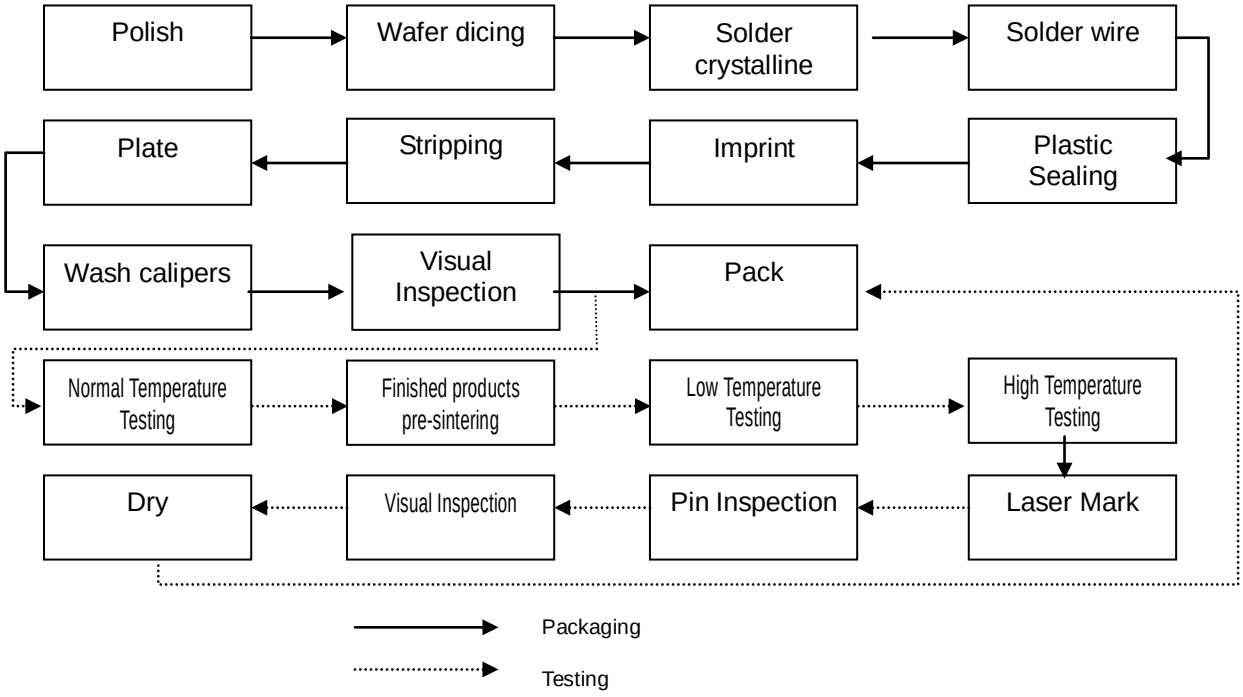
C. Alleviating the effect of manpower shortage by employing foreign workforce with permission from Ministry of Labor.

(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, Nichiden Seimitu Kogyo Co., Ltd., Samsung.
Substrate	Unimicron, Nanya, Simmtech, Eastern Company Limited, Japan Circuit Industrial, Shinko,Kinsus, and Daisho.
Die Attach Film (DAF)	Hitachi Chemical Co.(HK) Ltd, Nitto Denko Taiwan, Lintec, Henkel
Gold Wire	Chroma New Material, Tanaka
Compound	Hitachi Chemical Co.(HK) LTD., Hitachi Chemical Taiwan, and Kyocera.

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

1. There was no supplier accounted for over 10% of total purchase over the last 2 years.
2. List of Major Customers:

Major Customers Information for the Last Two Calendar Years

Unit: NT$ Thousands

	2017				2018				As of 2019 Q1			
Item	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	17,981,516	30.15	None	A	18,482,277	27.16	None	A	3,377,806	23.40	None
2	B	12,226,172	20.50	Related Party	B	14,923,812	21.93	Related Party	B	3,299,620	22.86	Related Party
3	C	6,647,619	11.15	None	C	8,673,567	12.75	None	C	2,269,567	15.73	None
	Others	22,776,776	38.20		Others	25,959,723	38.16		Others	5,485,166	38.01	
	Net Amount Sold	59,632,083	100		Net Amount Sold	68,039,379	100		Net Amount Sold	14,432,159	100	

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

(5) Production Quantity & Value Table 2017-2018

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

Year / Production Units	2017			2018		
	Capacity	Quantity	Amount	Capacity	Quantity	Amount
IC Packaging	11,424,846	10,445,569	28,323,774	11,424,846	10,445,569	28,323,774
IC Testing	8,204,195	6,701,693	8,913,694	8,204,195	6,701,693	8,913,694
Wafer Level Packaging	1,021	776	2,853,803	1,021	776	2,853,803
Wafer Level Testing	2,642	2,384	3,561,420	2,642	2,384	3,561,420
Total	19,632,704	17,150,421	43,652,691	19,632,704	17,150,421	43,652,691

(6) Sales Quantity & Value Table 2017-2018

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

Year / Sales Quantity & Value	2017				2018			
	Domestic Sales		Exports		Domestic Sales		Exports	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
IC Packaging	5,542,656	8,133,596	4,800,362	30,614,731	10,442,736	8,390,151	7,443,332	33,407,896
IC Testing	3,892,549	1,756,951	2,764,875	10,652,233	6,110,104	2,357,230	4,132,649	13,637,546
Wafer Level Packaging	135	847,725	646	3,131,447	186	915,240	634	2,807,917
Wafer Level Testing	910	1,395,396	1,489	2,815,774	1,407	2,072,481	2,360	4,024,018
Others	—	36,837	—	247,393	—	17,505	—	409,395
Total	9,436,250	12,170,505	7,567,372	47,461,578	16,554,433	13,752,607	11,578,975	54,286,772

3. Employee Status

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

Year		2017	2018	As of Mar 31, 2019
Employees number	Administration and Management Staff	1,251	1,369	1,369
	R&D Engineering Staff	2,318	2,381	2,365
	Operators	6,733	7,005	6,759
	Total	10,302	10,755	10,493
Average Age		32.8	33.7	34.12
Average Years of Service		4.04	4.66	5.14
Education Distribution in %	Doctorates	0.14	0.11	0.10
	Masters	7.28	7.74	7.83
	College and Universities	72.09	72.15	72.19
	High School	19.95	19.49	19.36
	Below High School	0.54	0.51	0.52

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.

	2018	As of Mar 31, 2019
Pollution Status	Waste Dispose Control Act	None
Disciplinary Unit	Environmental Protection Bureau	None
Disciplinary Actions	NT$66,000	None
Other losses	None	None

(2) Response Strategies

1. Improvement Measures

(1) The finding was a violation of Waste Disposal Act Article 31-1-1. Disposed wasted D-1703 exceed the max proposal allowances in Sep 2016 and Jan 2017.

(2) Extended maximum waste disposal allowance and establish internal control system.

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) Expected Environmental Protection Capital Expenditures for Next Three Years

Intended purchase of pollution prevention equipment or capital expenditure is listed below:

Unit: NT$ Thousands

Item	2019	2020	2021
New and Upgrade Pollution Control Equipment	42,000	47,000	52,000
Equipment Operations Fee	42,000	47,000	52,000
Waste Dispose Fee	72,000	75,200	77,500
Monitor Control Fee	950	1,000	1,000
Other Environmental Fee (Pollution control fee, Consultant Fee, Certification expenses)	33,500	36,500	39,000
Total Expenses	88,511	88,511	139,770

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: PTI has its own cafeteria offering meals with subsidies. Employee only has to pay a small amount to enjoy lavish meals.
11. On-Job-Training: To ensure a diverse talent, we "listen to needs" to consider internal and external issues. We are committed to meet the demand of employee learning, organizational development, and company policies, which has led us to PTI's unique "need and resolution oriented" operational model and training system, where we enhance the managerial abilities of executives, improve employee competence, and ensure the sustainable growth of the company.

(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 2017, the listed total amount contributed to pension was NT$290,347,000.

(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.

6. Major Contracts

Contract Classification	Contract Company	Contract Duration	Main Contents	Limitations of Terms
Construction Contract	Jian Ming Contractor Co. Ltd.	Oct 2018 – Apr 2020	Building Construction Contract	None
Bank Loan	CTBC Bank	Nov 2018 - Nov 2022	Medium-term credit loan	Commitment to maintain a certain ratio between the assets & liabilities and net worth
	Mega International Commercial Bank, Hsin-An Branch	Apr 2016 - Apr 2021	Machinery & Equipment Loan	None
		Dec 2016 - Dec 2021	Machinery & Equipment Loan	
		Apr 2018 - Apr 2023	Machinery & Equipment Loan	
		Aug 2018 - Aug 2022	Machinery & Equipment Loan	
	Yuanta Commercial Bank	Jan 2016 – Jan 2020	Medium-term credit loan	Commitment to maintain a certain ratio between the assets & liabilities and net worth
	KGI Bank	Dec 2018 - Dec 2022	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 2017 - May 2020	Medium-term credit loan	
	Hua Nan Bank	Mar 2017- Mar 2020	Medium-term credit loan	None
		Jun 2017 - Jun 2020		
		Jul 2018 – Jul 2021		
		Sep 2018 – Sep 2021		
	First Bank	Sep 2018 - Sep 2023	Medium-term credit loan	None
	Bank of Taiwan	Nov 2012 – Nov 2027	Building Construction Loan	None
		Nov 2016 – Nov 2021	Machinery & Equipment Loan	
		Sep 2017 – Sep 2022		
	Taiwan Cooperative Bank	Sep 2017 - Sep 2022	Machinery & Equipment Loan	None

Contract Classification	Contract Company	Contract Duration	Main Contents	Limitations of Terms
		Apr 2017 - Apr 2032	Building Construction Loan	
		Apr 2017 – Apr 2024	Medium-term credit loan	
	Shin Kong Bank	Nov 2018- Nov 2022	Medium-term credit loan	None
	Chang Hwa Bank	Jan 2017 – Jan 2020	Medium-term credit loan	None
		Mar 2017 - Mar 2023	Machinery & Equipment Loan	
		Jun 2017 – Jun 2023	Machinery & Equipment Loan	
	Taishin Bank	Feb 2017- Feb 2020	Medium-term credit loan	Commitment to maintain a certain ratio between the assets & liabilities and net worth
	O Bank	Nov 2017 - Nov 2020	Medium-term credit loan	Commitment to maintain a certain ratio between the assets & liabilities and net worth
Bank Loan	Land Bank of Taiwan	Dec 2017 – Dec 2020	Medium-term credit loan	None
	HSBC	Sep 2018 – Sep 2021	Medium-term credit loan	None
	Cathay United Bank	Sep 2018 – Sep 2021	Medium-term credit loan	None