# V. Operational Highlights

# **5.1 Business Activities**

#### 5.1.1 Business Scope

#### A. Business Scope

Business Scope	Sales %
Industrial Products	56%
Home Appliances	17%
Construction	5%
Others	22%
Total	100%

#### B. New products development

#### a. Industrial Products Business:

The development of the large sized motor with high pole for water circulating pump in power plant and water resource, the induction motor with the largest power, density and voltage, IE3 high-temperature exhausting motor, high voltage explosion-proof motor, JIS IE4 motor, GBI IM motor, CNS IE3 Exd T4, smart motor and auto motor.

#### b. Home-appliances business:

In line with the core values of "energy conservation, carbon abatement, smart application, and automation" for new product development, the home appliances business division has developed entire-range air conditioners and fully smart home appliances, dedicated to applications of cloud-end technologies, and rolled out various new products with EMS integrating information, communications, and variable frequency. The company also put forth the goal of "combination of cloud end and variable frequency for public sharing," extending the application of cloud-end management technology from home appliances to business market, schools, institutions, so as to create a cozy environment for all the people. TECO home appliances division integrates the group's solid ICT strength and R&D capability for electric control and TECO household smart air conditioners are 100% supportive of the Internet, which, coupled with the rollout of smart home appliances, on step ahead of rivals, will make TECO a an excellent leader of "smart home appliances" in Taiwan. In addition, the company plans to develop.

- I. In the light of the restriction from government, CSPF, the technology and system of domestic and commercial air-conditioner will be upgrated and integrated.
- II. The technology of under frozen fridge, and occupy the market share from Japanese brands.
- III. Low temperature logistics (freezing, frozen storage, low temperature cage car, multi-temperature cage car) and related products.
- IV. VRF system of inverter machine in parallel outdoor to satisfy the demand of green building and advanced business office.
- c. The ECO Energy business focuses on large-scale 2MW wind-power generating units, in addition to covering 5MW and larger-scale offshore wind-power systems, KW-grade horizontal small-scale wind-power generating units, generators, power converters, solar energy-power converter, and self-consumption-system, for both products and engineering works. Furthermore, through TECO's core business, motor and system automation, cooperating with Industrial Technology Research Institute and transportation dealer, we began with the development, design, produce, test and sale of the electric vehicle with specific function.

d. The power business division integrates the group's multiple industrial products, maximizing synergy effect. For engineering business, the company focuses on the provision of engineering services featuring smart application, green energy, energy conservation, and energy storage, in an extensive range, such as luxury houses, biotech/dedicated cancer hospitals, hi-tech factory buildings, large-scale public exhibition halls; major transportation and aviation projects, and Internet data centers (IDC). As for power equipment, the company offers switchboards and generators, notably products featuring smart application, green energy, and energy conservation, such as "smart generators," "smart switchboards," "smart micro grids," and "power charging posts for electric cars."

#### 5.1.2 Industry Overview

#### A. Industrial Product Business

With industrial motors featuring extensive applications and steady demand on the global market, Taiwan's industrial motor is a major export item for heavy-electricity products, thanks to the excellent evaluation it enjoys. Under the energy-conservation and carbon abatement policy of governments worldwide, the development of industrial motor centers on high efficiency, environmental protection, and low carbon emission. Due to the trend of energy conservation, carbon abatement, and green environmental protection, as well as the trend of automated industrial production, system automation focus in its development on products featuring high efficiency, energy saving, and precision system control.

System Automation products stand at the terminal in the development of the heavy-electricity industry, offering controlling components for products at the electricity-consumption end. They include control components for motors, including inverter, servo drive, and low-voltage devices for protecting peripherals, products essential to safety in industrial electricity consumption and products for automation and energy conservation.

#### B. Home-appliances industry

Energy conservation and environment-protection is a major appeal in product development at present. The application of DC inverter duty technology and environment-friendly coolant in home appliances can lead to the achievement of high COP value, which embodies the care of enterprises for "energy conservation" and "environmental protection." TECO is first domestic firm producing air conditioner featuring R32 coolant. In order to combat global warming, it takes advantage its experience in smart technology and energy conservation in developing energy management system and applies IOT in the entirety of its products successively, in line with the extent of market acceptance.

## C. New Energy industry:

- a. There are two trends in the development of wind-power turbine: One is large scale and offshore models. 1.5MW and 2MW are mainstream on-shore models, 3MW models are of both on-shore and offshore usage, while over 3MW models are mainly installed offshore. Various system suppliers have been rolling out models with ever larger capacities. Regarding solar power, the DPP government has been vigorously pushing the development of renewable energy since coming into power, aiming to raise the nation's total PV power capacity to 20GW by 2025, 20 times the existing level (around 0.94GW).
- b. Pollution problem of tricycle taxes: The Philippines has 4 million tricycles featuring traditional engines, 200,000 of which in Manila, which account for two thirds of the city's CO2 emission. The Philippine government is joining hands with the private sector in removing the tricycles under a PPP (public-private-partnership) scheme.

#### 5.1.3 Research and Development

- A. The company spent NT\$1,393,604 thousand on R&D in 2016
  - a. Industrial Motors Category

- 1. vertical motor for circulating water pump
- 2. medium voltage motor for chiller , certificated with VFD(Variable-frequency Drive) by Intertek in North-America
- 3. high efficiency TEFC(totally enclosed fan cooled) vertical motor
- 4. ultra-high voltage (up to 13.8kV) ODP(open drip-proof) and WP1&2(weather- proof) motor

#### b. System Automation Category

- 1. Functional safety inverter series product development
- 2. Netcom-type inverter series product development
- 3. Speed search algorithm development
- 4. Intelligent brake algorithm development
- 5. High frequency injection technology development
- 6. Slim-type servo drive product development
- 7. EtherCat Communication technology development
- 8. Online self-adjusting motor parameters technology development
- 9. Online/Offline controller parameter self-tuning technology development
- 10. Sync.RM control technology development
- 11. Sync.RM sensorless control technology Development
- 12. Development of Flux-weekness control technology for Servo Motor
- 13. Functional safety technology development
- 14. Functional safety certification technology development

#### c. Renewable energy- green energy

- 1. 5000KW Direct Drive Offshore wind turbine
- 2. utility electric vehicle

#### d. Freezing and Air-Conditioning Category

- 1. High CSPF(Cooling Seasonal Performance Factor) inverter air conditioner (split/multi split)
- 2. New refrigerant R32 inverter air conditioner
- 3. Inverter air conditioner with intelligent mobile control
- 4. Energy-saving inverter refrigerator
- 5. High EF(Energy Factor) refrigerator
- 6. Low temperature cabinet cart for delivery service
- 7. Air conditioner for elevator
- 8. Intelligent inverter chiller for machine center
- 9. Thermal cool box for delivery service
- 10. Intelligent cloud centrifugal chiller
- 11. Packaged air conditioner
- 12. Commercial air-cooled split conditioner
- 13. Multi split VRF(Variable Refrigerant Flow) inverter air conditioner with high CSPF(Cooling Seasonal Performance Factor)

- 14. High efficiency inverter centrifugal chiller
- 15. Air handling unit
- 16. Air conditioner for train

# 5.1.4 Long-term and Short-term Development

For industrial motor business, the company's long-term goal is to become the world's best motor manufacturer. In the short run, with the company's factories in Wuxi, Jiangxi, Qingdao, Fujian, Japan, Middle East and Turkey, gradually manifesting their benefits, the company will continue its global deployment exploring emerging market, such as Iran, Philippine, Turkey, Africa and India, and involve in new application, such as vessel and motor-trolley. In addition, TECO developed positively in industry low and nedium voltage inverter, servo drive, so that TECO can integrate sales and marketing to create commercial possibilities of energy saving by M (motor) plus D (drive). Under the main trend of global automation production, TECO provides high efficient and energy saving products which are good in machine precision control. TECO also provides control device going well with motor, such as inverter, servo drive and low voltage products which can protect the equipment to satisfiy the requiment of electricity safty, automation and energy saving. TECO sold motor, inverter and control device as single product originally. To respond the trend of IIOT, TECO has started to integrate the selling of electrification, maximize the profit of stategy, and streghthen the customer mastery. Furthermore, TECO can create more potencial opportunity on resource integration, so that reach selling target fastly.

For home appliances, in the long run, the company aspires to become the leading brand in Taiwan and actively penetrate overseas market. Household refrigerators embrace TECO's patented variable-frequency technology, which has been applied to all models with 300L capacity or larger. Develop and market lower-freezing refrigerator as well and plan to roll out mirror-glass refrigerator, in the hope of enhancing the market penetration of TECO's home appliances via new usage habit and brand-new appearance. Regarding commercial air conditioners, acquire the largest chiller contract manufacturer in Taiwan, TECO also developes the market of high end air conditioner for clean room related to medical care and high tech companies. In addition, TECO strategically conbined the main key components of compressor company to involve in the area of low and large voltage inverter VFD centrifugal chiller, so that TECO can make efforts in large infrastructure and grab market share from replacement market. Furthermore, based upon the experience in Taiwan, TECO develop in China and Southeast Asian market positively. As for liquid crystal products, backed by integrated cross-Strait supply chain, the appeal of extensive product lineup and functions/specifications, and stable product quality and supply, actively expand the share of the Taiwanese market. Thanks to enhancement of local people's living standard, proliferation of Internet business, home delivery, and low-temperature products, and urbanization, cold-chain logistics has emerged. According to the study of the Industrial Technology Research Institution, with annual output value of Taiwan's low-temperature foods reaching NT\$280 billion, the output value of cold-chain logistics amounts to NT\$50 billion, including over NT\$8 billion for low-temperature logistics and delivery. With freezing and air-conditioning business, home-delivery business, and IT business under the auspices of TECO Group, TECO can integrate logistics, payment flow, and information flow, thereby tapping the blue-sea market of low-temperature logistics business, which promises handsome potential.

Adhering to the concept of "quality and innovation" and backed by abundance engineering experience in electric machinery of buildings, MRT, and high-speed rail, the power division has spared no effort in soliciting engineering businesses in the fields of large commercial buildings, MRT, and rail. In recent years, the division has managed to land businesses for a number of major projects, including construction of IDC central offices and IDC centers for some cloud-end Internet firms, foraying into the booming cloud-end industry. In addition, it successfully tapped emerging business opportunities for smart energy conservation and overseas markets.

For wind-power business, the company will also start to develop and produce the offshore wind power system for adapting the wind condition in Taiwan. Regarding solar power, in line with the government's policy promoting green energy, the company, in addition to installing PV cells atop its factory buildings, has been vigorously tapping overseas markets, such as the Philippines and Vietnam.

#### 5.2 Market and Sales Overview

#### 5.2.1 Market Analysis

#### A. Sales (Service) Region

The company is shipping industrial products to such major regions as America, Europe, Australia, Japan, China and Taiwan, and targets to extend the reach to the Middle East, India and Turkey. Home appliances are shipped mainly to the domestic market, with minor markets including Australia, Southeast Asia, Singapore, and Japan. The company plans to tap the home-appliances markets in China, Vietnam, Indonesia and Turkey. For wind-power products, in addition to the Chinese market, the company is set sight on the markets of Southeast Asia, New Zealand, and Australia, where awareness of clean energy has emerged. For electrical vehicle, Philippines would be the main market, and then extending to other Asean countries. The business mode of PV ESCO is also appropriate to the Asean. So far, solar power generation on Philippine factory's roof is being planned positively.

#### B. Market Share (%) of Major Product Categories

#### (1) Industrial Product

The company boasts 50% domestic market share in general purpose sector; regarding overseas market, TECO takes over high market share in North America, South East Asia and Australia. TECO also offers customers custom motor featuring special usage and specifications, with the capacity reaching 30,000 horsepower in induction motors, ranking Top 5 around the world.

#### (2) Home Appliances and Air Conditioner

The company is one of the top three makers of home appliances and air conditioners in Taiwan, with market share reaching 9% for household air conditioners, 14% for refrigerators, 15% for washing machines, 10% for LCD, and 35% for commercial-use air conditioners.

#### (3) Wind-power business

The first wind-power turbine was erected in 2010 and got the certification of wind turbine the next year. So far TECO is the biggest wind turbine producer in Taiwn market, meanwhile TECO is the wind turbine producer with high local content. TECO's wind turbine can not only confront typhoon, but also cold and frosty weather, and it is applicable globally.

#### C. Market Trend of Major Product Categories

#### (1) Industrial Products

TECO originated from motor production, which has remained a core part of the company's operation, offering the dynamism for Taiwan's industrial development. After years of effort since the company's inception, it has set up various production and marketing bases through the world. It ranks among the world's top five heavy-electrical equipment suppliers and has hit world-class level, in terms of quality, variety, production scale, and sales channel.

The aspect of heavy-electric products, the company will continue intensifying integration of marketing and production, in order to boost market share and cut cost, development new products, and develop, via concerted effort of domestic and overseas companies under the group, OEM markets and emerging markets, in addition to aggressively soliciting orders for domestic and overseas civil-engineering works, so as to achieve the high-growth target. To tap the global business opportunities related to energy conservation and carbon abatement. To adapt to the trend of system sale, TECO lauched transmission system solution of I+M+G (I: Iinverter, M: motor, G: gear reducer), and expects to provide customers with connected sequence of service enhancing customer's satisfication.

#### (2) Home Appliances

Growth of market demand for home appliances is limited, since they are mature products. In addition to

existing products, the company will develop or introduce new products with high added value or key components/parts, such as smart appliance, full seriel of large-size (39" ~65")4k2k LCD TV, LED TV, inverter refrigerator with high EF value, muti-temperature-layer refrigerator, flexible multi-unit inverter air conditioner, remote-control SAA(Smart Appliance Alliance), energy-saving air conditioner with power consumption display, HEPA(air conditioner with medical level filter), and other home appliances with health appeal. The purpose is to expand sales channel and increase revenue and profit with differentiated products.

Meanwhile, the company has been constantly rolling out new models for industry-use air-conditioning and freezing products, such as package air conditioner, central air conditioning equipment, flooded water chiller, centrifugal water chiller, inverter multi-evaporator VRF air conditioner, and train air conditioner, thereby creating optimal and the most comfortable workplace for domestic and overseas industries. The company also offers various air-conditioning and freezing engineering service with cutting-edge technology, to help with industrial upgrading.

Along with the development of new technologies and the increasing convenience of the Internet, information products have integrated with home appliances, giving birth to information appliances. The company will marry its decades-long experience for home appliances with cutting-edge information technologies of the members of the group in developing information appliances suited to market needs, thereby creating even larger profits for shareholders.

Besides domestic market, the company has also made major inroads into the international market, following years of strenuous effort, especially for LCD TV and air conditioner which have enjoyed very good sales to Southeast Asia, Australia, and Europe. In the future, along with increase in national income and the advent of the information age, the company will continue to launch various even more human-friendly new products, so as to meet market demand.

#### (3) ECO Energy Business

In line with government policy, eco-energy and southern policy, the company targets Thailand and Vietnam, whose governments support renewable energy and full of wind power, oberving these markets and doing investment evaluation.

Regarding electric vehicle, the company viewes replaceing old vehicles in Philippines with functional electric vehicle as business. Regarding solar power, in line with new government promotes eco-energy, the company raise the ratio of renewable energy to 20%. The company has developed a series of solar power products, including converter, monitor, cooperation with solar module development team, and erecting solar power generation system on our rooves. If it is mature in the futhure, the company would not only promote in the domestic market but also Southeast Asia, asuch as the Philippines.

#### D. Favorable and Unfavorable Factors in the Long-range Future and Countermeasures

#### (1) Industrial Product

The company's industrial product has won very good repute, in terms of quality and function, in the industry. It has established a far-reaching operation network on both domestic and overseas fronts, including production and marketing bases in the U.S., China, and Southeast Asia, and marketing offices in Japan, Europe, and Australia. However, rapid change in the business climate and the transformation of economic conditions and industrial structure has posed major challenge to the company's future development.

Favorable and unfavorable factors for industrial product business, along with countermeasures follow:

#### a. Favorable factors

- Good brand image
- Higher production scale and market share than peers
- Solid market channel
- Reliable quality

- Complete product lineup
- Huge market potential of the greater China market, for which the company has established a firm foothold in China

#### b. Unfavorable factors

- Low-price competition from imported products in the domestic market due to WTO membership
- Market saturation leading to price competition among machinery firms and increasingly rigorous demand for price and delivery by buyers
- Transplantation of traditional machinery firms to China and other countries, due to their declining competitiveness and demand of emigrated downstream customers

#### c. Countermeasures

- Reduce cost, shorten delivery schedule, enhance competitive edge, and boost market share.
- Accelerate new-product development, develop products with high added value, and establish a
  production system featuring cross-strait division of labor.
- Increase overseas marketing offices and establish an effective service network.
- Strive for emerging business opportunities related to environmental production and energy conservation.
- Join hands with foreign engineering firms in soliciting project orders.

#### (2) Home Appliances and Air-Conditioning Business

#### a. Favorable factors

- TECO's home-appliances division has constantly rolled out innovative high-performance products, taking advantage of the company's good brand image, synergy resulting from resource sharing of the group, and its variable-frequency drive technology, which was transformed via re-platform from heavy-electricity variable-frequency drive technology. At the juncture of its 60th anniversary, TECO's home appliances have entered a new era.
- Roll out, one step ahead of peers, around-the-clock service and grasp channel, to augment competitive edge. Establish inverter common platform for products, enabling precision variable-frequency drive for various motor compressors and coordinate the control logics of different products, such as air conditioner, refrigerator, and washing machine, creating dynamism for innovation for the creation of new products and new functions. In addition, commit to the satisfaction of consumers in service quality and stock of materials.
- Dedicate to the pushing of R32 coolant and green manufacturing, becoming the only company producing R32 coolant in Taiwan, safeguarding Taiwan's carbon-repellant environment. For energy conservation and carbon abatement, pioneer the mapping of the blueprint of home-appliances green factory in Taiwan. Put in place a gold-medal dealership system, successfully augmenting the satisfaction of dealers.
- Join "smart home-appliances industry R&D alliance," integrating communications technology of smart home appliances and Internet digital-communications products of emerging products.
- Roll out, leading peers, models with first-grade energy performance conforming to MIT label.
- Pioneer the rollout of cloud-end smart air conditioners, in order to tap IOT (Internet of things) business opportunities.

#### b. Unfavorable factors

To over the Japanese myth among Taiwanese people, TECO has no other choice but augment its
product technologies and thereby compete with Japan's common models, boosting production
cost.

- Home appliances/household air conditioning market has saturated, featuring acute competition and low margin.
- WTO membership entails tariff cuts, bringing in competition from renowned brands of Japan, the U.S., Korea, and China.
- The Taiwanese market is limited in scale and it's difficult to develop the global branding, due to high expense for marketing own brands and insufficient price competitiveness.
- Competition from hypermarkets and chain sales channels impacts the traditional channel of agents.
- The current of bilateral or regional free-trade agreements in recent years has posed major challenge to Taiwan.

#### c. Countermeasures

- Make transformation in the direction of the Internet, expand online sales, develop high-performance IoT cloud-end fashion home appliances, dedicate to the pushing of marketing 4.0, so as to appeal to white-collar workers aged under 4.0.
- Expand the professional ability of research and marketing, keep innovation.
- Expand product lineup and cut cost via OEM (original equipment manufacturer) strategic alliance, thereby raising market share.
- Create the edge combining Taiwan's innovation and the large-scale cost advantage of mainland China's hardware, via SKD assembly in China.
- Grasp product development trend in domestic and overseas markets via the operation of product panel and new-product review sessions, thereby introducing innovative products timely.

#### (3) ECO Business

#### a. Favorable factors

- The company boasts complete product lineup and cutting-edge technology, capable of meeting the rigorous demands for connection to grid in the future. Its products suit both 50/60Hz, facilitating logistics work and cost control.
- The company has sound communications channel with its affiliates worldwide, enabling it a firm grasp of the latest development in renewable-energy laws/regulations and demands of grids worldwide.
- TECO's factories are good beginning for the solar power, and they are experience and real
  result.

#### b. Unfavorable factors

- Shortage of domestic R&D talents for wind tubine, impeding technological development
- Taiwan's wavering policy is adverse to long-term decision-making.
- Market of solar power is full of keen competition. The request for quality improves, however request for cost decrease.

#### c. Countermeasures

- Set up Asian supply chain by utilizing the wind-power production capacity of China, thereby gaining a local edge.
- Take advantage of Taiwan offshore model wind farm, tap technoloty transfer from Europe and integrate domestic component supply chain to develop the technology which can adapt to the unique environment in Tawian Strait.
- Enhance self ability of design and supervise, and manage quality efficiently. Acuire sales result of PV ESCO.

# **5.2.2 The Production Procedures of Main Products**

#### **Industrial Products:**

Products	Use	Production Process
High-efficiency motors, single-phase motors, low- and high-voltage 3-phase motors, synchronous motors, explosion-proof motors, brake motors, variable-pole motors, gear-reducing motors, crane motors, high-temperature exhaust gas fan motors, inverter-duty motors, high-thrust motors, steel-cased motors, aluminum-cased motors, eddy-current motors, wound rotor motors, submersible motors, DC motors, ventilation blowers, wind-powered generators.	for industrial production	Casting, Stamping, Electrical Engineering, Mechanical Engineering, Design, Planning, Assembly, Integration
Electric vehicle power motioned permanent magnetic motor, Electric vehicle power motioned induction motor, permanent magnetic motor, AC/permanent magnetic servo motor,	Industrial and electric vehicle used	Stamping, Electrical Engineering, Engineering, Magnet, Design, Planning, Assembly, Integration

ECO Energy Products:

Products	Use	Production Process
Wind power system	Energy supply	Power, Control, System integration, Composite materials, Casting, Stamping, Electrical Engineering, Mechanical Engineering, Design, Planning, Assembly, Integration, Shipping, Marine engineering
Solar energy system	Decentralized power supply	Solar energy system

Home Appliances & Air Conditioners:

Products	Use	Production Process
CSPF-first class air conditioner, new environment-friendly	Household,	Design, planning,
coolant inverter duty air conditioner (one to one and VRF	commercial, industrial	assembly, and peripheral
type), smart air conditioner, energy-saving inverter duty	use	
refrigerator, high EF-value refrigerator, direct-drive		
inverter duty washing machine, dehumidifier, clothes dryer,		
small home appliances, home-delivery low-temperature		
table trolley, elevator air conditioner, cooling device for		
machine tool, low-temperature logistics freezer,		
heat-dissipation module for PC		
LED TVs, DVD Players, Recordable DVD players, Stereo	Home Entertainment	Design, Planning,
Systems		Assembly
Chillers for centralized air-conditioning systems, package	Commercial, Industrial	Design, Planning,
air conditioners, split-type air conditioners, inverter	Applications;	Assembly, Integration
multi-evaporator VRF air conditioner, train	Transportation systems	
air-conditioning systems, centrafigual chiller	_	

# 5.2.3 Major Suppliers and Clients

A. Major Suppliers Information for the Last Two Calendar Years
None

B. Major Clients (each commanding 10%-plus share of annual order volume) Information for the Last Two Calendar Years

None

#### 5.2.4 Production over the Last Two Years

Unit: Units: NT\$thousand

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Year		2015			2016		
Output  Major Products	Capacity	Quantity	Amount	Capacity	Quantity	Amount	
Motor	1,343,571	1,195,783	13,353,943	1,343,571	1,074,182	11,569,305	
System Automation	12,315,637	7,324,716	4,776,765	12,357,589	8,002,746	4,600,082	
Home Appliance	371,130	277,584	4,418,147	361,910	312,567	4,329,808	
Others	784,112	784,112	1,851,416	909,935	909,935	3,757,114	
Total	14,814,450	9,582,195	24,400,271	14,973,005	10,299,430	24,256,309	

# 5.2.5 Shipments and Sales over the Last Two Years

Unit: Units; NT\$thousand

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Year	2015				2016			
Shipments \	Lo	cal	Exp	ort	Local		Export	
& Sales  Major Products	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
Motor & System Automation	1,444,261	6,068,272	3,101,482	21,191,035	1,538,689	6,578,052	3,393,508	21,142,887
Home Appliacne & Air Conditioner	798,348	7,024,925	118,488	669,282	873,687	7,189,917	105,554	611,487
Construction		2,943,060				2,466,811		
Other		8,787,569		1,914,430		9,567,638		2,367,045
Total	2,242,609	24,823,826	3,219,970	23,774,747	2,412,375	25,802,418	3,499,062	24,121,418

#### 5.3 Human Resources

Voor		2015		2016		March 31 2017	
	Year		Global	TECO	Global	TECO	Global
	Number of Employees	2,475	13,261	2,46	14,647	2,404	15,022
	Average Age		37.7	41.1	39.4	41.8	39.3
	Average Years of Service	13.5	8.5	14.0	9.4	13.6	9.6
	Masters above	15	8.1	15.2	8.0	15.4	7.8
	Bachelor's Degree	50.8	49.7	51.0	49.9	51.1	49.5
	Senior High School	27.7	32.5	27.4	31.0	27.1	31.9
	Below Senior High School	6.5	9.7	6.4	11.1	6.4	10.8

# 5.4 Information on Outlays for Environmental Protection

Explain in the recent one year up to the publication of the yearbook, the total amount of the company's loss (including compensation) from pollution and fines, plus possible outlay from countermeasures.

#### 5.4.1 Loss resulted from polluting environment

None

#### 5.4.2 Countermeasures

#### A. Improvement measures planned

a. Improvement plan for environmental-protection equipment

Installation of new environmental-protection equipment, waste reduction by strengthening the maintenance of existing equipment and improvement of production process, improvement of workplace, promotion of energy conservation, recycle and reuse of waste water, and reuse of waste materials, so as to prevent emission of pollutants and comply with legal requirements

b. Plan for management improvement

Continue pushing ISO14001 environment management system, pinpoint sections in the operational process (covering the entire product life which includes production, sales, the usage of product, and its disposal) which produce impact on the environment and improve the emission of pollutants, thereby alleviating the environmental impact and augmenting environmental performance.

Continue pushing OHSAS 18001 vocational safety and hygiene management system and the passage of the certification of CNS 15506 by the Council of Labor Affairs; incorporate safety and hygiene management into the corporate management culture; regularly hold environmental-protection and safety/hygiene training, fire-fighting drill and drill emergency response; regularly inspect operating environment and physical examination of employees, so as to lower the hazards of risk of workplace and prevent the occurrence of vocational disaster.

c. Continue pushing the program for checking and reduction greenhouse-gas emission

In response to global climate change, the company began to check greenhouse-gas emission in 2005 and passed external greenhouse gas inspection (ISO 14064-1) in 2012. The company started to push energy-conservation and carbon-abatement program, in 2006, especially power usage in the second category, which has been participated all the factories and staff units. The company has also established

energy-conservation task force and hired experts to help with diagnosis and offer advices for the execution of the program.

TECO has been dedicating to the materialization of the strategic vision of "TECO GO ECO," which calls for the production of energy-saving and environment-friendly products, via efforts in the fields of R&D, production, materials, process technology, and marketing. We also focus on green energy in business expansion and even organize various sci-tech and humanistic events via the foundation, in order to substantiate eco value and induce the company to develop in the direction of sustainability.

#### d. TECO Corporate Social Responsibility Report

Sustainable development for enterprise is an indispensable mindset for corporate management in the new century. At the time when enterprises are facing rigorous challenges, they need to rethink the direction and strategy for their sustainable development and manifest their management performance via report on corporate social responsibilities. The report covers information on the three major aspects of economy, society, and environment, so as to improve external image and help communicate with stakeholders. Corporate social reponsibility is the fifth information report unrelated to financial performance publicized by TECO in 2014, with the purpose of manifesting the company's methods, achievements, and related strategies and goals of the company in fulfilling social responsibilities in a transparent and open manner for the social public and stakeholders. The report mainly covers various acts and performance figures concerning corporate governance, environmental protection, social participation, and concern for employees, clients, and consumers.

- e. Projected capital outlay for environmental protection in the next three years
  - (a)Planned procurement of anti-pollution equipment and outlays
    - i. Plans in next three years

2017	2018	2019
Maintenance, improvement, or	Maintenance, improvement, or	Examination and founding of gas
installation of air	installation of air	storage tank and heavy oil steam
pollution-abatement equipment	pollution-abatement equipment	boiler. Improving surroundings.
Replacement of the consumption	Replacement of the consumption	Maintenance, improvement, or
materials of activated carbon,	materials of activated carbon,	installation of air
filtering net, and filtering ball	filtering net, and filtering ball	pollution-abatement equipment
Installation of energy-saving light	Installation of energy-saving light	Replacement of the consumption
and light-pervious window awning	and light-pervious window awning	materials of activated carbon,
		filtering net, and filtering ball
Clean caking of oil in kitchen	Clean caking of oil in kitchen	Installation of energy-saving light
		and light-pervious window awning
Improvement of waste-water	Improvement of waste-water	Pipeline for waste-water
equipment	equipment	

#### ii. Projected outlays (Unit: NT\$thousand)

2017		 2018		2019	
\$	35,568	\$ 53,280	\$	27,632	

#### (b) Expected improvements

- i. Cut emission of air pollutants and waste water to the level in compliance with legal requirement.
- ii. Push cut on industrial waste by reducing output of waste materials, strengthening mechanism for the recycle of waste materials, implementing control for emission reduction.

- iii. Establish energy-conservation and carbon-abatement task force, which will pinpoint equipment with larger energy consumption and areas with higher power consumption, as well as formulate feasible energy conservation programs after consulting experts/scholars and push their execution, thereby slashing carbon emission.
- iv. Push to cut emission of greenhouse gas and dedicate to the development of energy-conserving environment-friendly products, to alleviate the impact on the environment and fulfill corporate social responsibility.
- v. Install high-efficiency power-saving lighting to enhance the efficiency of existing lighting equipment and adopt proper power deployment and control circuit to save power.
- vi. Carry out risk evaluation for workplace, so as to assure the provision of a safe workplace.

#### f. Expected effect of improvement

- (a) Effect on net profits
  - i. Avoidance of loss from fines
  - ii. Avoidance of loss from suspension of operation
  - iii. Avoidance of disputes for environmental pollution
  - iv. Cut production cost via reduction of environmental-protection outlays, thanks to waste abatement and pollution prevention.
- (b) Effect on competitiveness status
  - i. Augment the corporate image and meet the expectation of related parties.
  - ii. Comply with the global environmental-protection current, avoid trade barriers, and boost sales opportunities.
- B. Failure to adopt countermeasures
  - a. Failure to adopt improvement measures: Nil
  - b. State of pollution: Nil
  - c. Possible loss and compensation amount: Nil

#### 5.4.3 Workplace and Protection Measures for the Personal Safety of Employees

- A. The safety and hygiene management system was vertified and passage of performance certification.
  - The safety and hygiene management system of various plants (Plant Chung-Li, Plant Kuan-Yin, and Plant Hu-Kou) has passed the "OHSAS 18001," "Taiwan Occupational Safety & Health Management Sysytem (CNS15506)," and its following check.
- B. Special environmental-protection and safety/hygiene units are presented at the headquarters, every department, and factory.
  - Complying with "Enforcement Rules of the Occupational Safety and Health Act", specialized units and staffers are instituted to handle affairs related to environmental protection and safety/hygiene and practices related to safety/hygiene affairs are carried out regularly, according to legal requirement.
- C. Environmental-protection and safety/hygiene training are conducted regularly:
  - New employees and employees shifted to new positions must undertake safety/hygiene training courses, whose duration and contents comply with legal requirement. Only trained personnel with necessary licenses

can operate dangerous machines or equipment, such as overhead traveling crane, forklift, organic solvent, boiler, and high-pressure gases. Specialized staffers or technicians all must undertake retraining regularly.

#### D. Workplace safety

In addition to the Occupational Safety and Health Act for machinery equipment and norms for use and safe utilization of personal protective gears, the company has managerial staffers carry out safety inspection regularly, to assure compliance by employees to safety norms in their operation and detect points of further improvement, thereby fostering the safety awareness among all employees and achieve safety protection better than legal requirement, to assure safety of workplace.

#### E. Pushing Globally Harmonized System of Classification & Labeling of Chemicals

To highlight dangerous and hazardous substances, safety labels for materials have been installed in workplaces, where updated information on safety data sheet (SDS) is available as reference for employees. Change in raw materials and production process cannot be made before the review, collection of information on safety data sheet (SDS), and completion of training of related employees in accordance with the company's management measures.

#### F. Detection of operating environment

According to "Enforcement Measures for Detecting Laborers' Operating Environment," detect the operating environment for chemical and physical elements, with the former including carbon dioxide, dust particle, and organic solution, and the latter including noise and overall temperature index. Entrust qualified operating-environment detecting institutions to carry out the detection periodically, to assure compliance of the operating environment with law/regulation.

#### G. Fire-fighting drill and emergency-response drill for special workplaces are held regularly:

Ordinary fire-fighting drill takes place every half a year and covers such training items as team organization, practice, response to emergency, and post-accident handling. Emergency-response drill for special workplaces is conducted every year, in order to train employees' capability in handling accidents.

#### H. Health care and management

Employee health is the largest assets of the company. The Company respectively exercised health examination for regular task and special dangerous task according to "Labr Safety and Health Act". Organize health classes, publicize health information and organize health-improvement activities. Continue pushing employees to stress self-health management and create a safe and comfortable working environment, so as to enhance employees' health and physical strength and further extend the concept to their families.

#### I. Carry out the event of environmental-protection and industrial-safety month

TECO carries out the event of environmental-protection and industrial-safety month in June and August every year, consisting of various activities, including hanging of event banners and posting of posters on environmental protection and industrial safety, holding of training on environmental protection and industrial safety and awarded answers for questions, a blending of education and fun for all staffers, so as to augment staffers' knowledge of environmental protection and industrial safety and arouse their awareness of environmental protection and industrial safety, on top of plant inspection by external experts, for enhancing the performance for the execution of environmental protection and industrial safety.

#### 5.5 Labor Relations

5.5.1 The company's various employee welfare measures, advanced study, training, and retirement system, along with their execution, as well as labor-management agreements and various employee-benefit protection measures follow:

#### A. Employee welfare measures

The company has high regard for employee welfare and work safety constantly, as evidenced by the setup of employee welfare committee back in 1964, which handles various employee welfare measures, so that employees can share the profits of the company. The company's welfare measures follow:

- a. Employee welfares provided by the company
  - (a) Marriage and funeral subsidy
  - (b) Physical examination for employees
  - (c) Company uniform
  - (d) Dividend sharing and stock option
  - (e) Year-end bonus
  - (f) Pension fund
  - (g) Meal subsidy
  - (h)Labor insurance, health insurance, group insurance, pension hand over and accident insurance
  - (i) Preferential rates for purchase of the company's products
- b. Welfare measures provided by the employee welfare committee
  - (a) Subsidy for travel, marriage, funeral, and hospitalization
  - (b) Group parties
  - (c) Birthday gift
  - (d) Childbirth subsidy
  - (e) Gifts for three major festivals
  - (f)Scholarship for employees' children
  - (g)Other employee welfares
- B. Advanced study, education, and training

The company appropriates 0.1% of its annual revenue for employee training, which is included in the annual corporate plan, holding regular courses on professional and management knowledge for employees at various positions and cultivating excellent talents with aggressive working attitude and innovative concept, according to training plans for various stages for their career.

In 2016, the company held courses on executive training, common knowledge, professional capability, and company policy, which boasted 13,329 persons of attendance, on top of 163 persons of attendance for outside courses. Every employee received 19.75 hours of training on average.

#### C. Retirement system and its implementation

The company has formulated "measures for labor retirement," in compliance with legal requirements, according to which the company appropriate a certain amount of fund to be deposited into a specialized account at the Central Trust of China for care of employees after their retirement. For employees who embrace labor-pension system after July 1, 2005, the company appropriates a sum equivalent to 6% of their monthly pays, set according to an official pay scale, to their individual accounts at the Labor Insurance Bureau every month.

#### D. Labor-management agreements and protection measures for employee benefits

The company has enjoyed harmonious labor-management relationship, thanks to open-minded management style of executives and the understanding of company policy by laborers.

The company set up TECO employee welfare committee in April 1964, in charge of various employee welfare affairs, which was followed by the establishment of TECO labor union in July, 1974. In March 1980, the company's factories initiated labor-management meeting, in order to boost working efficiency, improve labor conditions, and bridge the opinions of management and labor. The company has reported to the regulator for the establishment of those organizations, which have been functioning normally over the past years.

To safeguard the interests of both labor and management and assure their harmonious relationship, the company signed a group contract with representatives of the labor union on December 28, 1981, which was then forwarded to and approved by the regulator.

In 1999, the company was granted the "national good labor-management relationship business award" and "exemplary labor-management meeting award" by the Council of Labor Affairs and the "good labor-management relationship award" by the Taoyuan County government. In 2009, it passed the certification for healthy workplace by the Bureau of Health Promotion and in 2010 it was granted the award of "national manpower innovation" by the Council of Labor Affairs and "excellent award for healthy workplace" by Taipei city government, in 2012 it was awarded "2012 Corporate Citizen Award" by Common Wealth and was awarded "Happy Corporate Award" by Taiwan City Government in 2013, as well as "Employment Award" by Taoyuan County in 2015, in acknowledgement of the company's effort in achieving a harmonious and co-prosperous relationship between labor and management.

#### E. Guidelines for employee behavior or ethics

- a. To uphold the working order at workplace and clearly define the rights and obligations of labor and management, the company has formulated "employee working rules," which has been approved by the regulator and publicized as the guidance for the company in employee management. The rules set out clear regulations on employees' position, title, employment, leave, service, salary, reward and punishment, evaluation, promotion, welfare, layoff, compensation for vocational injuries, and retirement. The company expects every employee to do his/her best to contribute to the achievement of the company's business goal and enhance his/her ethical standard. It, therefore, has formulated "behavioral guidelines," with major contents including:
  - (a) The staff in the implementation of the company's business, should avoid by means of its position in the company as of to themselves, spouse, parent, child or any other person to obtain improper benefits.
  - (b) The company's internal information (or information related to the company's interest or business), be it in the aspect of technology, finance, or business, is the company's business secret, for which employees have the obligation of confidentiality and cannot leak it to any outside party. In addition, after leaving the company, employees still have to abide by the confidentiality obligation according to the principle of integrity and refrain from leaking the company's secrets or utilize them in engaging in illegal competition.
  - (c) Stake with customers: Employees should obey the lawand related regulation of the company to avoid inappropriate present under any other's name or in any way. Trading with customers and suppliers sincerely fairly and transparently with steady, professional attitude.
  - (d) Political donation: Employees should not donate to or sponsor via other means political candidates

under the name of the company or its affiliated institutions.

- (e) Charitable donation: When making any charitable donation or sponsorship, staffers should check the outlet and purpose of such donation and sponsorship to make sure it doesn't become bribery in disguise.
- (f) Obligation of reporting and informing: The company encourages open communication with staffers and third parties, who can report or inform management or human-resources unit for any question, finding, unfair treatment at worksites, or violation of the guidelines, without vicious fabrication, though. The company will handle such reporting or informing confidentially and protect those who take part in the investigation.

Subjects of the reporting or informing should not revenge or threaten the informants, who can report any revenge, threat, or harassment to human-resources unit upon which the company will act instantly.

# 5.5.2 Status of the company's staffers related to financial-information transparency in securing certificates designated by the regulator.

License	Number of People		
License	Financial Accounting	Auditing	
CPA	4		
US CPA	1		
CFA	2		
CIA	0	2	
Investment trust and consulting representative	5		

# 5.5.3 The company had not incurred any loss from labor-management dispute as of the date for the publication of the annual report and expects no such loss in the future.

# **5.6 Important Contracts**

Agreement	Counterparty	Period	Major contents	Restrictions
1. Agency contract	Top-Tower Enterprises Co., Ltd. and others, totaling 617 companies	One year after the starting of shipment, should any party fail to notify contrary opinion three months before the ending of the contract, the contract will be extended by one year automatically, an arrangement which will be repeated afterwards.	obligations for agency for home appliances, electric motor, and air conditioners.	Nil
2. Investment Agreement	Management Board of New Distriction, Wuxi Governent		Investment of Die-cast Center	Nil