



QTC ENERGY PCL.

QTC Energy Public Company Limited

The background of the entire page is a deep blue. In the center, a large, glowing tree is formed by a network of white lines and dots, resembling a digital or neural network. The tree's base is positioned in front of a city skyline at night, with various buildings and structures visible. The overall theme is technology, energy, and sustainable growth.

**GOING TO THE FUTURE
WITH SUSTAINABLE GROWTH**

**ANNUAL
REPORT 2019**

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Message from the Chairman of the Board



It is well known that many things happened since the beginning of 2019 with greater impact on the Thai economy than expected, particularly impact from the trade war, causing Thailand's export sector to contract rather than grow as expected. In 2019, Thailand's economy grew by only 2.5 percent.

In 2020, Thailand's economy is expected to grow by 2.5 – 3.0 percent due to delays in passing budget laws, coronavirus outbreaks threatening the world's economic growth at least in the short term, lower industrial production and effects on the world's supply chain. Although long-term effects are unclear, the aforementioned events are new negative factors affecting the global economy, which had been slowing down since the previous year.

In 2019, however, the Company had good performance and was able to return to earning profit by intensifying modifications of strategic plans inside and outside the organization. In growing sales, the Company remained focused on exports, increasing foreign sales agents, increasing expert sales teams to penetrate new markets with purchasing power abroad while maintaining old customer bases and building new domestic customer bases with a focus on customers who have capacity, modifying production processes to reduce production costs, modifying debt follow-up strategies and distribute investment in energy businesses to build the Company's strength and growth.

Furthermore, the Board of Directors recognizes the importance of good governance. In 2019, the Company had excellent corporate governance scores for five consecutive years, reflecting the importance of corporate governance. The Company hopes to modify and maintain management standards consistently under corporate management frameworks.

The Board of Directors would like to thank our patrons, stakeholders and associates domestically and abroad who have always supported the Company. We would also like them to rest assured that the Board of Directors will manage at full capacity with determination to govern the Company to grow with security and sustainability.



Mr. Krirk-Krai Jirapaet

Chairman, Board of Directors

Message from the Chief Executive Officer



To all stakeholders,

In 2019, the Thai economy fell in the middle of the trade war between the United States and China and interest reduction measures of the United States Federal Reserve to protect the United States' economy from global economic recession. The aforementioned situation inevitably caused effects on the Thai economy. Fluctuations in exchange rates of the baht currency and other currencies changed according to the situation with both financial risks and opportunities. The Company had appropriate management measures.

In the aforementioned situation, the Thai government continued to push for use of budgets to develop infrastructure and support the industrial sector and government agencies to use environmentally friendly electrical appliances to reduce direct and indirect greenhouse gas emissions, resulting in an increase in demand and conversion to use high quality transformers capable of meeting SDG indices in the area of climate change at the national level.

Overall, QTC's economy in 2019, specifically in transformers, electrical appliances and services, showed minor income gains from 2018 at 0.11 percent. Sales and service income amounted to 816.48 million baht and came from the government sector (33.25%), the private sector (33.54%), foreign countries (29.78%) and service income and other (3.43%). Although income in 2019 grew slightly from 2018, the Company was able to profit more. In 2019, the Company had a net profit of 14.55 percent while net profit in 2018 was 0.49 percent. This resulted from modifying strategic plans for 2019 – 2020 to be a year of quality and building strength for the organization with an emphasis on using financial strategies, trade account management policies and inventory management policies as instruments. This created liquidity and financial capacity. In addition, the Company reduced allowances for trade accounts and inventory. In the area of sales and marketing, the Company emphasized on profit and sale expense controls. In the area of production, the Company consistently modified production process to reduce time loss, waste and increase product quality based on Total Quality Management (TQM). Furthermore, the Company added new products for sale in 2019 such as BUSDUCT from Dynamic Electrical SDN. BHD., Malaysia, under the DE BUSDUCT brand, and Solar Inverters from Huawei Technology (Thailand) Co., Ltd. under the Huawei brand to provide another channel for increasing the Company's income because both types of equipment can be offered to customers who have needs at the same time as transformer sales proposals in order to distribute economic risks and improve the organization's strength in becoming a future global leader.

Regarding operations of Q Solar 1 Co., Ltd., income in 2019 increased from 2018 by 4.05 percent while management costs and expenses declined from 2018 by 12.87 percent, resulting in a 23.38 percent increase in net profits from improved solar panel efficiency and other equipment for maximum generation capacity.

In the area of significant management in the organization, the Company received a certificate as a member of the Thailand Private Sector Collective Action Coalition (CAC) Against Corruption. According to assessments of employee satisfaction, attachment and life balance in 2019, assessment results were found to be higher than 2018 by 7.46 percent, 5.14 percent and 1.2 percent, respectively. Employee work safety remains an issue recognized by the Company as a risk. The Company creates stringent measures and promotes awareness continually. In 2019, accidents were 17.39 percent less than 2018. In the area of environmental management, the Company remains committed to cost-effective use of resources and management of leftover materials from production. In 2019, the Company was able to follow the Zero Waste to Landfill guideline at 100 percent.

In the area of participation in community development, the Company remains focused on public participation in communities via activities where communities meet QTC. In 2019, the Company organized activities to promote education for students in activity models for creating inspiration and real experience based on issues learned from the activity in 2018. The Company received cooperation from the faculty and students from King Mongkut's University of Technology North Bangkok in organizing Science Week activities for students in the Mab Yang Phon community. In addition, the Company supported many other activities and projects in the community.

In closing, on behalf of the Board of Directors, executives and all employees, the Company would like to thank shareholders, customers, trading partners, community members and all stakeholders for supporting and encouraging the Company. The Company promises to adhere to the Company's given vision, missions and sustainable development frameworks. Moreover, the Company will be determined and dedicated in developing processes, tools, machines and human capital in order to be able to stand amidst economic and social change with security and sustainability.



(Mr. Poonphiphat Tantanasin)

Chief Executive Officer

Financial Highlights

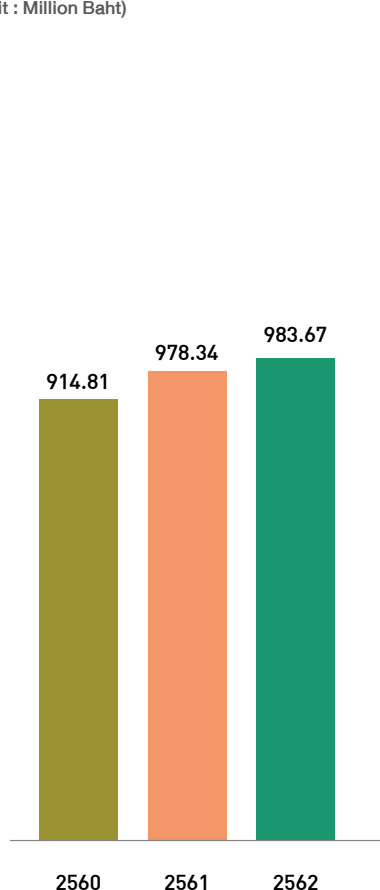
(Unit : Million)

Financial	2017	2018	2019
Revenue from sales and services	901.53	958.05	965.17
Total revenue	914.81	978.34	983.67
Cost of sales and services	(760.81)	(747.76)	(615.25)
Gross profit	154.00	230.58	368.42
Selling and Administrative expenses	(394.72)	(193.89)	(153.17)
Profit before interest and income taxes	(237.99)	35.66	217.62
Net profit	(247.25)	(0.12)	198.40
Total comprehensive income (loss) for the year	(252.46)	(0.48)	197.18
Net profit per share	(0.89)	0.001	0.578
Dividend per share	-	-	0.15*
	(341,088,220)	(341,092,557)	(341,092,557)
Total assets	2,037.27	1,918.99	1,856.37
Total liabilities	595.18	477.34	217.54
Shareholders' equity	1,442.09	1,441.64	1,638.83

Note : *waiting for the approval of the annual general meeting of shareholders 2020.

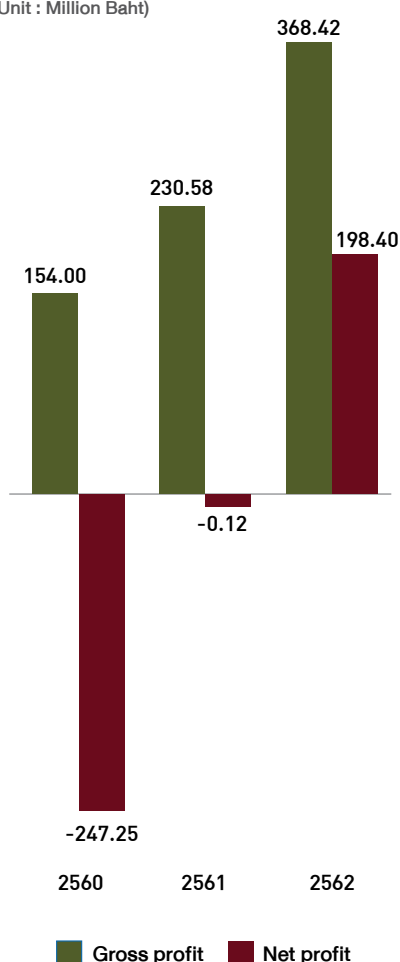
Financial Highlights

(Unit : Million Baht)



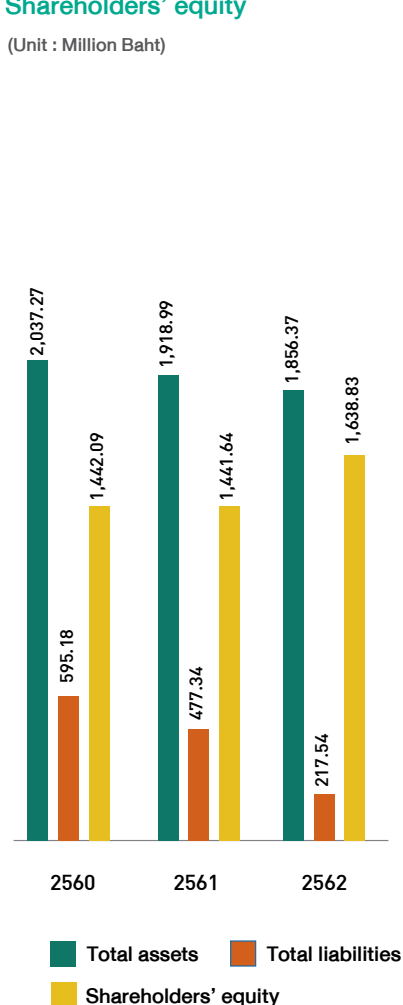
Gross profit / Net profit

(Unit : Million Baht)



Total assets, Total liabilities and Shareholders' equity

(Unit : Million Baht)



Policy and Overview of Business Operations

1. Background

Formerly known as Quality Transformer Co., Ltd., QTC Energy Public Co., Ltd., was registered on 19 July 1996 with a starting registered capital of 10 million baht to conduct the businesses of manufacturing and distributing electricity distribution transformers. On 4 July 2003, the company changed its name to QTC Transformers Co., Ltd., and on 19 August 2010, the company became a public company limited under the name of QTC Energy Public Co., Ltd., and listed on Stock Exchange Thailand on 28 July, 2011 with Mr. Poonphiphat Tantanasin as the founder. Mr. Poonphiphat Tantanasin has over 44 years of experience working in the transformer manufacturing industry. He has worked with major and leading companies manufacturing transformers domestically and held responsibilities in various aspects, including design, assembly and production as well as sales and marketing, so he has knowledge and expertise covering all aspects in the field of transformers. Furthermore, the company's administrative team, engineers and most company employees have had knowledge, experience and expertise in the electricity transformer business for more than 44 years. Moreover, they have received training from leading transformer manufacturing countries in foreign countries, such as Germany and Japan. The aforementioned experience has helped the company develop high quality transformers which have become widely accepted among the government enterprise customer group involved with electricity, namely, the Metropolitan Electricity Authority, the Provincial Electricity Authority, and in private sector customer groups both domestically and abroad.

Throughout the past, the company has continually developed transformer products and received accreditation according to various standards, such as Thai Industrial Standards TIS 384-2543 from the Thai Industrial Standards Institute, Ministry of Industry, ISO 9001:2000 standards for designs, production, and maintenance of distribution transformers. Furthermore, the company is able to produce quality transformers meeting various international standards, which is proof of the international quality of the transformers manufactured by QTC.

2 Overview of Business Operations & Key Developments

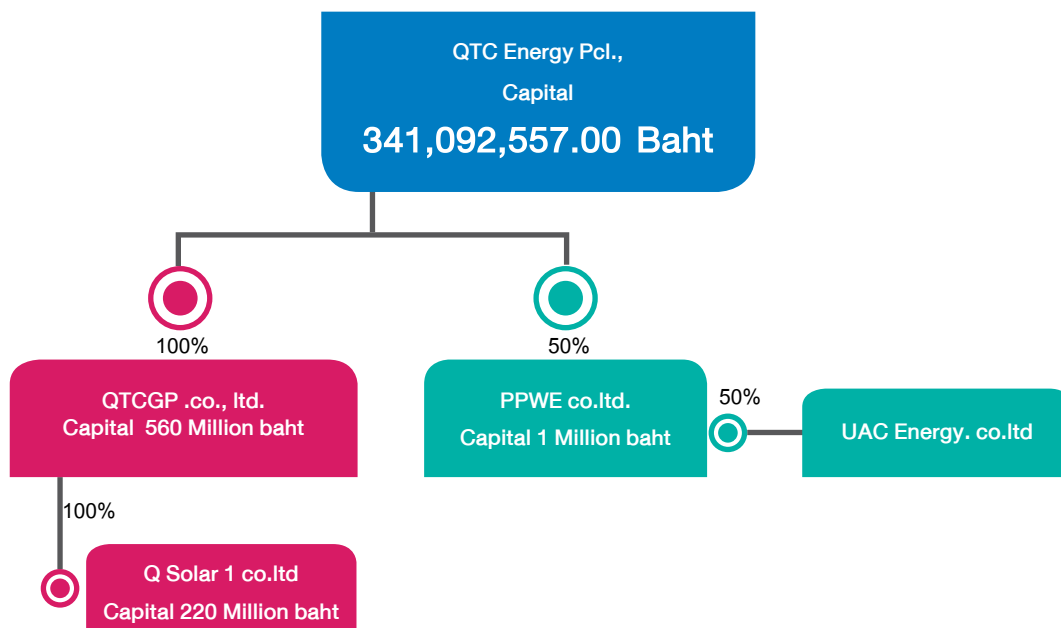
QTC Energy Public Co., Ltd., conducts the businesses of manufacturing and distributing custom made transformers to domestic and foreign customers under the "QTC" trademark and customer trademarks. At present, the company's transformer projects can be categorized as follows:

1. Distribution Transformers
 - 1.1 Hermetically Sealed Oil Type Distribution Transformers.
 - 1.2 Open Type Transformers with Conservators.
2. Power Transformers
3. Cast Resin Transformer
4. Super Low Loss Transformer (Amorphous Metal Distribution Transformer : AMDT)
5. Special Transformer is designed and manufactured according to usage and features to customers such as Earthing Transformer, Unit Substation, Pad mounted.

Furthermore, the company also provides various types of services for customers, such as scheduled checks and maintenance, transformer repairs and maintenance, transformer oil fill services, transformer rental services, etc., in order to support customer needs and facilitate both customers who have purchased QTC transformers and other customers in general.

The company has one subsidiaries and one associated company include

1. QTC Global Power Co., Ltd. (subsidiaries Company) produces electricity and other energy, the establishment on 28 September 2016 capital 560 million
2. PPWE Co., Ltd. (associated company) produces energy, the establishment on 12 January 2016 capital 1 million.



Progress with Purpose & Vision



Quality of DETAILS

Attention to DETAILS is at the heart of our principles and encompasses every area of QTC with comprehensive coverage from staff, thought processes, work methods, technological advancement, factory operation, products and consideration for society and environment.



Vision

To be a technology provider with world-class standard in power industry along with social and environmental responsibilities and good governance



Mission

1. Providing integrated technology solution for businesses in power industry
2. Developing environmental-friendly products, services and internal processes to create added value in the value chain
3. Developing human resource to enhance professional capabilities in both soft skills and hard
4. Operating in good governances along with corporate social responsibility
5. Building sustainable growth businesses in long-term to gain trust of all stakeholders



Management Principles

QTC is firmly committed to three good corporate governance principles.

1. Ethical, just and transparent management.
2. Product and service provision meeting international quality standards.
3. Focus on corporate social and environmental responsibility in strict compliance with human rights principles.

The company's vision and mission are reviewed annually with review and approval from the company's Board of Directors on 19 December 2019 to ensure the concurrence of the company's vision and mission with current economic conditions.

The details of significant company developments in the past are as follows:

2004

- The company increased registered capital by 40 million baht from the original registered capital of 10 million baht by issuing 400,000 new common shares valued at 100 baht per share in order to propose sales to existing shareholders, which put the company's registered capital at 50 million baht.
- The company was accredited by Thai Industrial Standards TIS 384-2543 for power transformers from the Thai Industrial Standards Institute, Ministry of Industry.
- The company's 250 kVA and 1000 kVA transformers passed short circuit testing from CESI, Italy.

2005

- The company increased its registered capital by 50 million baht from the original registered capital of 50 million baht by issuing 500,000 new common shares valued at 100 baht per share in order to propose sales to existing shareholders, which put the company's registered capital at 100 million baht.

2007

- The company's 167 kVA transformers passed short circuit testing from KEMA, the Netherlands.
- The company received ISO 14001:1996 standards accreditation from RWTÜV, Germany (2001).

2008

- The company received OHSAS 18001:2007 accreditation for occupational health and safety management systems from UKAS, England. SGS Company (Thailand) provided accreditation.
- The company's 500 kVA and 2000 kVA transformers passed short circuit testing from CESI, Italy.
- The company was granted the right to use the Q-MARK from the Joint-Standing Committee on Commerce, Industries and Banking (JSCCIB) consisting of the Thai Chamber of Commerce, the Federation of Thai Industries, and the Thai Bankers' Association as a mark for certification of product quality, business ethics, responsibility to customers, consumers and society including the manufacturing, trade and service sectors as follows:
 1. Single phase oil type distribution transformers with sized 1-167 kVA with maximum voltage of 36 kv and three-phase oil type distribution transformers sized at 1-2500 kVA with maximum voltage of 36 kV with quality meeting the standards of trade partner countries and the standard quality of Thailand, which was issued on 27 May 2008 and effective until 26 May 2010.
 2. [Standards for] the distribution, services, repairs, and installations of transformers, including corporations, issued 21 March 2008 and effective until 20 March 2010.
- The company was granted ISO 14001:2004 accreditation for environmental management systems from UKAS, England, and NAC, Thailand. SGS Company (Thailand) provided certification.
- The company received the Thai Chamber of Commerce Business Ethics Standard Test Award of 2008 from the Thai Chamber of Commerce as an organization with ethical management according to the ethics of the Thai Chamber of Commerce comprising the following six key issues:
 1. Fair treatment of all parties concerned.
 2. Disclosure of information and transparency.
 3. Risk management.
 4. Promotion of excellent corporate practice.
 5. Corporate social and national responsibility.
 6. Yielding sustainable tangible returns for the nation.
- The company increased registered capital by 50 million baht from the original registered capital of 100 million baht by issuing 500,000 new common shares valued 100 baht per share for proposed sales to existing shareholders at the proposed sales price of 100 baht per share.
- The company was awarded the International Europe Award for Quality from exporting transformers for distribution in Spain.

2009

- The company was granted ISO 9001:2008 accreditation for quality management systems from UKAS, England, and NAC, Thailand. SGS Company (Thailand) provided accreditation.
- The company was awarded the “D” Class Certificate of Clean Food Good Taste standards from the Department of Health, Ministry of Public Health.

2010

- The company received the 2nd Annual SME National Award of 2009 in machinery and equipment category from the Office of Small and Medium Enterprise Promotion (OSMEP), Ministry of Industry.
- The company received the Prime Minister's Industry Award 2010 for SME Industrial Management from the Ministry of Industry.
- In September of 2010, the company received extension of rights to use the Q-MARK from the Joint-Standing Committee on Commerce, Industries and Banking (JSCCIB) in the production sector and the trade and services sector as follows:
 1. Single phase oil type distribution transformers sized at 1-167 kVA with maximum voltage of 36 kv and three-phase oil type distribution transformers sized at 1-2500 kVA with maximum voltage of 36 kV and quality to meet the standards of trading partner countries as well as the quality standards of Thailand, which were issued on 10 September 2010 and effective until 9 September 2012.
 2. Distribution, sales, installation, and maintenance of transformers, which were issued on 10 September 2010 and effective until 9 September 2012.
- The company received a “D” Class Certificate for Clean Food Good Taste standards from the Department of Health, Ministry of Public Health.
- In August of 2010, the company became a public company limited and changed its name to QTC Energy Public Co., Ltd.

2011

- In March, the company registered changes in share value from the original value of 100 baht per share to 1 baht per share, including an increase in registered capital by 50 million baht from the original amount of 150 million baht, which put the registered capital at 200 million baht. Shares were divided as follows:
 - Forty-five million new common shares which were offered for public sales and
 - Five million new common shares which were offered for sale to company directors and employees.
- In April, the company constructed new offices at 2/2 Soi Krungthep Kritha 8 (5), Krungthep Kritha Rd., Huamark, Bangkok, 10240
- In July, the company proposed an initial public offering (IPO) of shares and Stock Exchange of Thailand listed the company's ordinary shares as registered shares and began buying and selling on 28 July 2011 under the company's abbreviated name for buying and selling shares, QTC.
- In August, the company was a top recipient of a Zero Accident Award (no occupational accidents causing ongoing work to stop over the past year for no less than 1,000,000 working hours) from the Zero Accident Campaign of 2011 from the Department of Welfare and Labor Protection, Ministry of Labor.
- In October, the company received the Top Corporate Governance Award (Eastern Region) from the Thai Chamber of Commerce Good Corporate Governance Commission in cooperation with the Office of the NCCC and the Thai Chamber of Commerce University.
- In November, the company was considered by the Thai Laboratory Accreditation Scheme, Electronics-Telecommunications, which decided to approve accreditation of the company's laboratory according to TIS 17025-2548 standards with the Thai Industrial Standards Institute
- In December, the company was awarded for food hygiene with a “D” Class certificate for “Clean Food, Good Taste” from the Health Department, Ministry of Public Health for the second consecutive year.

2012

- In February, the company was officially awarded laboratory accreditation for laboratory testing ability in compliance with TIS Standard No. 17025-2548 (ISO/IEC 17025:2005), Certificate No. 12007/T 309 from the Thai Industrial Standards Institute, Ministry of Industry.
- In February, the company moved to work at its new headquarters located at 2/2 Krungthep Kritha 8 (5), Krungthep Kritha Rd. Huamark, Bangkok, 10240.
- In March, the company commenced the construction of a plant in order to expand production capacity by adding silicon steel slitting machines and silicon steel cutting machines. The construction was complete and the plant was open for operations in December in Pluak Daeng, Rayong.

- In April-September, the company participated in an industrial logistics efficiency building project by the Department of Primary Industries and Mines in cooperation with the Technology Promotion Association (Thailand –Japan).
- In June, the company was awarded a certificate for being a health-promoting workplace by Honorary Professor, Dr. Kasem Wattanachai, Privy Councilor.
- In July, the company participated in a cooperative project for the production of Amorphous Distribution Transformers (AMDT) with Hitachi Metals Japan.
- In October, 100 KVA 3 Ph 50 Hz 22000-400/230 V, 100,500 KVA 3 Ph 50 Hz 33000-400/230 V. and 150,300,750 KVA 3 Ph 50 Hz 24000-416/240 V electricity transformers passed short circuit testing by the CESI in Italy with Type Test Certificate No.B2030322-27.
- In September, the company was awarded a certificate for meeting clean technology criteria for entrepreneurial development from the Governor of Rayong.

2013

- In January, the company was granted accreditation for laboratory testing in compliance with TIS 17025-2548 (ISO/IEC 17025:2005) Standards, Certificate No. 12007/T 309 from the Thai Industrial Standards Institute for the second consecutive year in which the company applied for accreditation.
- In May, the company produced Amorphous Distribution Transformers (AMDT) in cooperation with Hitachi Metals Japan with 1000 kVA sized transformers for commercial distribution with the first transformer in October.
- In June, the company participated in an in-depth consulting project for SMEs with the lean standards of the Department of Industrial Promotion.
- In June, the company participated in a consultation project for 5-S activities by the Technology Promotion Association (Thailand –Japan) for corporate restoration and development in increase production capacity with the 5-S system.
- In June, the company was awarded a Class 3 Green Industry certificate by the Ministry of Industry.
- In June, the company signed a joint venture project contract for the construction of electricity transformers in Vientiane, Laos.
- In July, the company purchased a Distribution Transformer Test System DTTS 3-2500 from HAEFELY Switzerland in order to enhance the efficiency of testing and certification for increasing work volume in the future. The installation and use began in February of 2014.
- In July, the company commenced the construction of a plant for manufacturing tanks for electricity transformers.
- In November, the company was granted CSRI Recognition in the Rising Star category by the Corporate Social Responsibility Institute, Stock Exchange of Thailand.

2014

- In January, the company laid out its main foundation (Phase 1) for modifying processes by implementing the Total Quality Management System (TQM) to sustainably develop the organization.
- In February, the company applied for participation in TLC: ISO50001 Project with the Thai Industrial Standards Institute and the company is currently requesting certification from SGS Co., Ltd.
- In March, company has received the honor a card to show that they have been taken to prevent and solve the problem of drugs in operations by the white factory project. Level 3 from the Department of labour protection and welfare, and Rayong province.
- In May, the company completed construction of transformer tank factory buildings.
- In July company sent the first set of transformers to sell in Japan successfully.
- In November, the company received the 5S Model Award 2014 for the Bangkok Office area, the CSR Office area, Factory No. 3 areas and the Coiling Room area.
- In November, the company received three awards for registered companies for corporate social responsibility from the Stock Exchange of Thailand at the SET Award as follows:
 1. CSR Recognition 2014 in the general category.
 2. CSR Award 2014 in the outstanding category.
 3. CSR Award 2014 in the excellence category.

2015

- In January, the Company began to lay out key foundations (Phase 2) for process modification by implementing total quality management toward sustainable corporate development.
- In March, the Company was granted ESG100 Certification by Dr. Pipat Yodprudtikan, Director of Thaipat Institute, for outstanding business sustainability.
- In March, the Company established subsidiary company QTC Panco Co.,Ltd. The company hold 85% of total shares capital 20 million.

- In April, the Company signed an exclusive distribution agreement with Industrias Mecano Electricas Fontecha Yebenes, S.L. (IMEFY) to become the exclusive sales representative in Thailand for Cast Resin transformers from Spain. We will distribute under the QTC brand and manufacture under IMEFY.
- In July, the Company applied for participation in an organization health project with Share Foundation to develop processes and improve corporate happiness for work life balance.
- In September, the Company received a certificate for passing an evaluation by the Department of Disease Control, Ministry of Public Health, at good levels as a happy workplace free from disease and danger at the provincial level.
- In October, the Company was granted the SET Sustainability Award 2015 as the only MAI-listed company to receive this award and the Thai Sustainability Investment Award (Sustainable Shares) from the Stock Exchange of Thailand.
- In October, the Company was evaluated for CG Scorecard by IOD and found to be excellent as a confirmation of good and transparent governance.
- In November, the Company was certified by the 5S Model Award 2015 for production areas at Factory 4, warehouse areas and electrical transformer repair areas.
- In November, the Company received the Best Investor Relations Award and the Company was the only MAI-listed company to receive the Best Investor Relations Award from the Stock Exchange of Thailand
- In November, transformers with power capacity of 75 kVA and 300 kVA passed the Short Circuit Test by CESI, Italy.
- In December, the Company received the Best Corporate Governance Award of 2015 for the Central Region from Prof. Dr. Kasem Wattanachai in praise of entrepreneurs who operate businesses with principles of corporate governance by adhering to transparency and honesty.

2016

- In January, the Company laid key foundations (Phase 3) in the work to improve processes by applying the Total Quality Management system (TQM) to develop the company for sustainability.
- In January, the Company established a joint company, namely, PPWE Co., Ltd. and holds 50 percent of registered shares at the amount of one million baht to operate an energy business in a joint venture with UAC Global PCL.
- In June, the Company increased its registered capital from 70 million baht from the previous value of 200 million baht to become 270 million baht by the issuance of 70 million new ordinary shares at one baht marked price per share for sales to persons in a limited circle.
- In September, the Company was awarded a certificate for being a pioneer company registered by Thailand Greenhouse Gas Management Organization (Public Organization).
- In September, the Company established a subsidiary, namely, QTC Global Power Co., Ltd. to operate an energy business with a registered capital of 10 million baht.
- In September, the Company was given the Outstanding Corporate Governance Award (Eastern Region) from the Committee for Promoting Codes of Conduct and Anti-Corruption, Thai Chamber of Commerce, together with the Bureau of Corruption Prevention in State Enterprises and Private Sector.
- In October, the Company received the Innovative Organization Award of 2016 from Dr. CHaiyawat Wibulsawasdi, Chairman of the Stock Exchange of Thailand.
- In October, the company was rated excellence in the CG Scorecard by the IOD, thereby providing affirmation to good corporate governance and transparency.
- November: The Company increased registered capital of QTC Global Power Co., Ltd. from the original amount of 10 million baht to 140 million baht.
- In December, the Company was awarded the Green Industry Level 4 by the Ministry of Industry.
- In December, the Company received the Sustainability Report Award for the year 2016 as organized by the CSR Club, Thai Listed Companies Association.

2017

- January: The Company began laying down key foundations (Phase 4) for improving processes by implementing total quality management (TQM) to develop the organization's sustainability.
- January: The Company invested in increasing amorphous transformer production lines.
- May: The Company purchased 15 percent of shares in Green Earth Power (Thailand) Co., Ltd. to invest in the Minbu Solar Power Plant Project in Myanmar.
- June: The Company issued and proposed sales of warrants to purchase common shares (QTC-W1) to current shareholders according to shareholding ratios at no more than 67,500,000 baht and increased registered capital from 270 million baht to 337.50 million baht.
- August: The Company purchased all shares in L Solar 1 Co., Ltd. and increased registered capital from 337.50 million baht to 359.24 million baht.

- October: The Company allocated 70 million baht of capital increase shares by offering limited sales to individuals and increased registered capital from 359.24 million baht to 429.24 million baht.
- October: The Company received the 5S Award, Silver Level.
- December: The Company received the Thai Chamber of Commerce Business Ethics Standard Test Award of 2017 from the Thai Chamber of Commerce.
- December: The Company received the Sustainability Report Award of 2017 provided by the CSR Club and the Thai Listed Companies Association.

2018

- In January, the Company increased registered capital of QTC Global Power Co., Ltd. from 140 million baht to 700 million baht.
- In January, the company established the important foundation (phase 5) for improving process by applying Total Quality Management (TQM) in order to develop knowledge to be sustainable.
- In January, the company resold shares to Green Earth Power (Thailand) Company Limited for co-investing in Minbu Solar Power Project in Myanmar.
- In June, the company was certified by Green Label for transformer products from Thailand Environment Institute.
- In August, the company received the Workplace Health Promotion Award (Advanced Level) from Thai Health Promotion Foundation.
- In August, the company received the 3R Award from the Department of Industrial Works.
- In August, the company received the Certificate from presenting a contribution in Thailand Quality Conference under the theme of Kaizen Activity Promotion Process for 3-Time Efficiency.
- In September, the company received the Standard TGO Guidance Certificate of the Carbon Footprint for Organization from Thailand Greenhouse Gas Management Organization (Public Organization)
- In October, the company received the Thai Chamber of Commerce Best Award 2018 from Thai Chamber of Commerce.
- In December, the company received the Sustainability Report Award 2016 from CSR Club of Thai Listed Companies Association.

2019

- In January, the Company began to lay down vital foundations (Phase 6) for modifying processes by implementing Total Quality Management (TQM) to develop the organization toward sustainability.
- In January, the Company signed a business contract with Dynamic Electrical SDN. BHD., Malaysia, to be the first and only distributor of DE BUSDUCT in Thailand.
- In February, the Company received a certificate of membership in Thailand's Private Sector Collective Action Coalition (CAC) Against Corruption
- In July, the Company received a platinum award for passing assessments in the project to promote preparation of work safety, occupational health and work environment systems and standards from the Ministry of Labor.
- In August, the Company reduced QTC Global Power Co., Ltd.'s registered capital from 700 million baht to 560 million baht.
- In September, the Company received a certificate for Standard TGO Guidance of the Carbon Footprint for Organization from the Thailand Greenhouse Gas Management Organization (Public Organization).
- In October, the Company joined Huawei Technology (Thailand) Co., Ltd. in a business collaboration to appoint QTC as the distributor of Huawei solar inverter products for converting direct current (DC) from solar panels into alternate current (AC).
- In October, the Company received a Green Label certificate for transformer products meeting quality standards with less environmental impact when compared to products performing the same function from the Thailand Business Council for Sustainable Development
- In December, the Company accepted the Sustainability Disclosure Recognition Award of 2019 from the Thaipat Institute.

3. Policy and Business Performance Goals

The Company has a goal to become a high quality world class manufacturer of transformers with an emphasis on development of the Company's transformer quality and standards to manufacture highly effective transformers and build confidence and acceptance among domestic and foreign customers. The Company's goal is to have an income of 1,500 million baht by 2024 to achieve this goal.

Therefore, the Company focuses on maintaining old customer bases and building new customer bases, particularly in ASEAN countries. The company enhanced production efficiency levels since 2012 – 2017 to support market growth, increase foreign sales teams to enter new markets. In the area of research and development, the Company never ceased to invent and develop new products to meet customer needs. Currently, the Company has developed and manufactured smart transformers, a transformer innovation, and invented super low loss transformers to conserve energy, reduce global warming and meet the needs of all customer groups. Thus, the Company has a strong capacity for competing in the market.

The Company recognizes the organization's security and sustainability. Thus, the Company expanded the business to the energy business and looked for domestic and foreign business opportunities in order to build a strong foundation for building the business. In 2017, the Company began to invest in the energy business by investing in alternative energy power plants and the Company will continue to build the business in 2018 – 2024. Currently, the Company is conducting feasibility studies of many projects.

The Company recognizes the importance of valuable human resources. Therefore, the Company has invested in personnel with a focus on development based on human capital guidelines to develop personnel in connection with the organization's strategies in order to be able to compete in the 4.0 Era economy and develop supply chain management. Raw material movements between countries in the AEC are exempt from customs tariffs and reduced to 0 percent. Each country has a policy to reduce logistics costs. The Company must prepare for convenient and fast movement of goods in AEC countries without customs taxes to increase competitive capacity. Furthermore, the Company places importance on developing quality and effectiveness of the Company's services in addition to improving processes with the Total Quality Management (TQM) system, enabling personnel to work systematically and effectively in order to increase competitive advantages and create maximum satisfaction for customers.

In managing the organization to achieve the aforementioned goal, the Company adheres to business operation principles under the concept of "Quality of Details", corporate governance principles and business ethics for sustainable growth.



Board of Directors



1. Mr. Krirk-Krai Jirapaet
Chairman of Board



2. Mr. Natthaphon Lilawatthananon
Director



3. Mr. Phonrat Piathanom
Director



4. Dr. Kamol Takabut
Director



5. Mrs. Wasara Chotithammarat
Director



6. Mr. Suroj Lamsam
Director



7. Mr. Viraphonh Viravong
Director



8. Mr. Preedee Ngamsantikul
Director



9. Mr. Phairoj Boonpun
Director



8. Mr. Poonphiphat Tantanasin
Director



9. Mr. Ruangchai Kritsnakriengkrai
Director

1. Mr. Krirk-Krai Jirapaet	
Position	Chairman of Board
Age	77 years
Educational qualification	<ul style="list-style-type: none"> Master of Economics, Sydney University, Australia B.A. (Hons) Political Science, Chulalongkorn University
Directorship training	<ul style="list-style-type: none"> Role of Chairman (RCP) Class 11/2005 Director Certification Program (DCP) Class 61/2005 Audit Committee Program Class 8/2005
Work Experience	<ul style="list-style-type: none"> Chairman/Independent director, Banpu Public Company Limited Member, National Reform Council Minister of Commerce Director, Monetary Policy Committee, Bank of Thailand Vice Minister, Minister of Tourism and Sports Advisor to the Prime Minister, Office of the Prime Minister Permanent Secretary, Ministry of Commerce Director, Board of Directors, the Bank of Thailand
Current job positions	<ul style="list-style-type: none"> Chairman, QTC Energy Public Company Limited Chairman of Advisors to the Company, Banpu Public Company Limited Chairman, Triple i Logistics Public Company Limited Vice President, Council of Trustees of the University of the Thai Chamber of Commerce/ Chairman of the Executive Directors, UTCC Chairman, Thai Garment Development Foundation Chairman, the Thai Institute of Directors(IOD)
In any listed companies	QTC Energy Public Company Limited/ Triple i Logistics Public Company Limited/ Banpu Public Company Limited
In any non-listed companies	Thai Chamber of Commerce / Thai Garment Development Foundation / Thai Institute of Directors
Appointment Date	22 June 2016
% of shareholding in the Company	None

2. Mr. Natthaphon Lilawatthanun	
Position	Director/ Chairman of the Audit Committee
Age	62 years
Educational qualification	Master of Business Administration Program (MBA) ,Chulalongkorn University
Directorship training	<ul style="list-style-type: none"> Director Accreditation Program (DAP), Class 10/2004 Audit Committee Program (ACP), Class 3/2004
Work Experience	<ul style="list-style-type: none"> Director, Unimit Engineering Public Company Limited Director, Unique Mining Services Public Company Limited Director and Director manager,Excellent Business Management Company Limited Director and Director manager ,NBS Research & Consulting Company Limited
Current job positions	<ul style="list-style-type: none"> Director and Chairman of Board Audit committee, QTC Energy Public Company Limited Director, Unimit Engineering Public Company Limited Director and Director manager ,Excellent Business Management Company Limited Director and Director manager , NBS Research & Consulting Company Limited Director manager, Excellent Digital Development Company Limited Director manager, Jobmyway Recruitment Company Limited
In any listed companies	QTC Energy Public Company Limited / Unimit Engineering Public Company Limited
In any non-listed companies	Excellent Business Management Company Limited / NBS Research & Consulting Company Limited/ Excellent Digital Development Company Limited/ Jobmyway Recruitment Company Limited
Appointment Date	28 July 2011
% of shareholding in the Company	None

3. Mr. Phonrat Piathanom	
Position	Director/ Chairman of the Nomination, Remuneration and Corporate Governance Committee/ Audit Committee
Age	67 years
Educational qualification	<ul style="list-style-type: none"> Master's Degree, Management, Sasin Graduate Institute of Business Administration of Chulalongkorn University Master's Degree, Business Administration, National Institute of Development Administration
Directorship training	<ul style="list-style-type: none"> Director Certification Program (DCP), Class 118/2009 Director Accreditation Program (DAP), Class 78/2009 Audit Committee Program (ACP), Class 31/2010 Role of the Compensation Committee (RCC), Class 31/2014 Advanced Audit Committee Program (AACP), Class 33/2019
Work Experience	<ul style="list-style-type: none"> Director, NIDA Center for Enhancing Competitiveness Director, MDICP Intertrade Company Limited Director, MDICP Holding Company Limited
Current job positions	<ul style="list-style-type: none"> Director and Audit committee, QTC Energy Public Company Limited Director, Srangkonkeng Company Limited Director, Audit committee, Ziga Innovation Public Company Limited
In any listed companies	QTC Energy Public Company Limited
In any non-listed companies	Srangkonkeng Company Limited
Appointment Date	28 July 2011
% of shareholding in the Company	Ordinary shares 357,500 shares, representing 0.10 per cent

4. Dr. Kamol Takabut	
Position	Director/The Nomination, Remuneration and Corporate Governance Director
Age	70 years
Educational qualification	Dr. Ing. (Thermodynamiques & Energetique) Perpignan University, 66025 Perpignan ,France
Directorship training	Director Certification Program (DCP), Class 67/2005
Work Experience	<ul style="list-style-type: none"> Independent Director/Audit Committee/Chairman of the Board Getabec Public Company Limited The 5th and the 6th President, the Council of Engineers Committee, the Energy Conservation Fund, Ministry of Energy Arbitration Committee, Ministry of Justice CEO, Italian Thai Power Company Limited
Current job positions	<ul style="list-style-type: none"> Independent Director, QTC Energy Public Company Limited CEO, Italian Thai Power Company Limited Coordinating Committee for the preparation of Basic Nuclear Power Project Committee, the Energy Conservation Fund, Ministry of Energy Committee, the Arbitration Committee, Ministry of Justice Committee, the city chart of Ministry of interior Independent Director, Getabec Public Company Limited
In any listed companies	QTC Energy Public Company Limited/ Getabec Public Company Limited
In any non-listed companies	Italian Thai Power Company Limited
Appointment Date	31 March 2016
% of shareholding in the Company	None

5. Mrs. Wasara Chotithammarat	
Position	Director/Director of the Audit Committee
Age	55 years
Educational qualification	<ul style="list-style-type: none"> Master of Business Administration Program (MBA) ,Thammasat University Bachelor's Degree, Faculty of Commerce and Accountancy, Thammasat University
Directorship training	<ul style="list-style-type: none"> Director Certification Program (DCP), Class 117/2002 Advanced Audit Committee Program(AACP) Class 25/2017
Work Experience	<ul style="list-style-type: none"> Chief Accounting Officer, Summit Group, Summit Auto Seat Industry Company Limited Director and Chief Financial Officer, Team Precision Public Company Limited Division Controller, Benchmark Electronics (Thailand) Public Company Limited Corporate Controller, Siam City Cement Public Company Limited
Current job positions	<ul style="list-style-type: none"> Director, QTC Energy Public Company Limited Accounting Director, Summit Group, Summit Auto body Industry Co, Ltd. Director, Supamitr Food (2014) Company Limited Director, Supamitr Food (2015) Company Limited Director, Supamitr Food (2017) Company Limited
In any listed companies	QTC Energy Public Company Limited
In any non-listed companies	Supamitr Food (2014) Company Limited, Supamitr Food (2015) Company Limited, Supamitr Food (2017) Company Limited, Summit Auto Body Industry Co., Ltd.
Appointment Date	13 September 2016
% of shareholding in the Company	None

6. Mr. Suroj Lamsam	
Position	Director
Age	53 years
Educational qualification	<ul style="list-style-type: none"> MM. Sasin Graduate Institute of Business Administration of Chulalongkorn University MA., Communications, New York University, New York U.S.A. BA., Marketing and Consumer Studies, Syracuse University, Syracuse New York
Directorship training	<ul style="list-style-type: none"> Director Accreditation Program 40/2005, Thai Institute of Directors Association
Work Experience	<ul style="list-style-type: none"> Senior Executive Vice President, Loxley Plc. Director, Loxley Orbit Plc. Director, National Innovation Agency
Current job positions	<ul style="list-style-type: none"> Director, QTC Energy Public Company Limited President, Loxley Plc. Director, ASM Security Management Co., Ltd. Director, Car Convenie Co., Ltd. Chairman, Loxbit Plc. Director, Loxley Trading Co., Ltd. Director, Loxley Global Co., Ltd. President, L Food Solutions Co., Ltd. Director, Loxley Mobile Co., Ltd. President, Loxley Property Development Co., Ltd. President, Data Mining Co., Ltd. President, Thai Gateway Co., Ltd. Director, Loxley GTECH Technology Co., Ltd. Director, Ekpavee Co., Ltd. Director, Thanakorn Vegetable Oil Co., Ltd. Director, Navakij Co., Ltd. Director, Lamsam Estate Co., Ltd. Director, L Business Process Outsourcing Co., Ltd. Director, Phatra Samphant Co., Ltd. Director, Point Asia Land Development Co., Ltd.

In any listed companies	QTC Energy Public Company Limited / LOXLEY Public Company Limited / Loxbit Plc.
In any non-listed companies	ASM Security Management Co., Ltd./ Car Convenie Co., Ltd./ Loxley Trading Co., Ltd./ Loxley Global Co., Ltd./ L Food Solutions Co., Ltd./ Loxley Mobile Co., Ltd./ Loxley Property Development Co., Ltd./ Data Mining Co., Ltd./ Thai Gateway Co., Ltd. /Loxley GTECH Technology Co., Ltd./ Ekpavee Co., Ltd./ Thanakorn Vegetable Oil Co., Ltd. / Navakij Co., Ltd./ Lamsam Estate Co., Ltd./ L Business Process Outsourcing Co., Ltd./ Phatra Samphant Co., Ltd./ Point Asia Land Development Co., Ltd
Appointment Date	29 August 2017
% of shareholding in the Company	None

7. Mr. Viraphonh Viravong

Position	Director
Age	69 years
Educational qualification	<ul style="list-style-type: none"> Mechanical Engineering of Victoria University/Australia Higher Diploma in Politics & Public Administration National Academy of Politics & Public Administration, Lao PDR International Arbitration and Alternative Dispute Resolution International Law Institute/ Georgetown University/ USA
Directorship training	<ul style="list-style-type: none"> Director Accreditation Program (DAP), Class No. 164/2019
Work Experience	<ul style="list-style-type: none"> Vice Minister, Ministry of Energy & Mines Director General/ DOE, Ministry of Energy & Mines Director General/ DEPD, Ministry of Energy & Mines Member of Lao National Chamber of Commerce and Industry Board of Directors, Nam Theun-2 Power Co. Ltd. Board of Directors, Theun Hinboun Power Co. Ltd. Member of Lao National Committee for Energy (LNCE) General Manager, EdL Electricite Du Laos (EdL)
Current job positions	<ul style="list-style-type: none"> Director, QTC Energy Public Company Limited Honorary Advisor, PV Consulting Sole Co. Ltd. Senior Advisor to CSG Management Honorary Advisor to the President of AIDC Advisor to Natural Heritage Institute, USA
In any listed companies	QTC Energy Public Company Limited
In any non-listed companies	None
Appointment Date	25 April 2018
% of shareholding in the Company	None

8. Mr. Preedee Ngamsantikul	
Position	Director
Age	44 Years
Educational qualification	<ul style="list-style-type: none"> Master of Economics, Faculty of Economics, Srinakharinwirot University
Directorship training	<ul style="list-style-type: none"> Director Accreditation Program (DAP), Class No. 161/2019
Work Experience	<ul style="list-style-type: none"> Manager for Southeast Asia, Bekaert Maccaferri Underground Solutions BVBA (BMUS). Manager for Southeast Asia, BASF Foreign Sales Manager, Southeast Asia Region, Thai Master Builder Co., Ltd. Sales Manager, UGC Sales Manager, Degussa Construction Chemical (Thailand) Co., Ltd. Managing Director, Kiri Solution Co., Ltd. Regional Manager of Southeast Asia, Promsang Co., Ltd. Consultant Chairman, ILF Consultant Former Assistant Managing Director, RNC Engineering Co., Ltd. Field Engineer, Lumpini Station, Subway Project, BCKT MRTA Joint Venture, Initial System Project, Underground Structures. Civil Engineer, Hopewell (Thailand) Co., Ltd. Structural Engineer, Asia Ice Co., Ltd.
Current job positions	<ul style="list-style-type: none"> Director, QTC Energy Public Co., Ltd. Academic Director, Thailand Concrete Association Vice Chairman of the Board, Foreign Affairs Division, Thailand Underground and Tunneling Group, Engineering Institute of Thailand Regional Advisor ILF Consulting Engineers (Asia) Ltd. Managing Director, DD 49 Co., Ltd.
In any listed companies	QTC Energy Public Co., Ltd.
In any non-listed companies	ILF Consulting Engineers (Asia) Ltd./DD 49 Co., Ltd.
Appointment Date	7 June 2019
% of shareholding in the Company	2,450,000 common shares or 0.72 percent.

9. Mr. Phairoj Boonpun	
Position	Director
Age	76 Years
Educational Qualifications	<ul style="list-style-type: none"> Bachelor's Degree in Accounting, Ramkamhaeng University
Training in Director Roles and Duties	<ul style="list-style-type: none"> Director Accreditation Program (DAP), Class No. 164/2019
Work Background	<ul style="list-style-type: none"> Director, Management Audit Division, Internal Audit Division, Metropolitan Electricity Authority (MEA) Touch Ross Co., Ltd Interpreted internal audit recommendations using a risk-oriented audit system for the consultant company, Touch Ross Co., Ltd.
Current Positions	<ul style="list-style-type: none"> Director, QTC Energy Public Co., Ltd. Director, Mind Merge Consultant Co., Ltd.
Registered Company Businesses	QTC Energy Public Co., Ltd.
Non-registered Company Businesses	Mind Merge Consultant Co., Ltd.
Date of Appointment	7 June 2019
Holdings of the Company's Securities	None

10. Mr. Poonphiphat Tantanasin	
Position	Director
Age	67 years
Educational qualification	<ul style="list-style-type: none"> Bachelor's Degree, (Electrical Engineering) King Mongkut's Institute of Technology North Bangkok Capital Market Leader Program, Capital Market Academy (CMA. 13)
Directorship training	<ul style="list-style-type: none"> Director Certification Program(DCP), Class of 117/2009 Director Accreditation Program(DAP),Class of 77/2009 Finance Statements for Director(FSD), Class of 4/2009 Role of the Compensation Committee (RCC),Class 20/2015
Work Experience	<ul style="list-style-type: none"> Director, Managing Director, QTC Energy Public Company Limited Chairman of Board Executive, QTC Energy Public Company Limited Managing Director, QTC Panco Company Limited
Current job positions	<ul style="list-style-type: none"> Director, Nomination Committee, Chief Executive Officer, QTC Energy Public Company Limited Director, M-DIC Holding Co., Ltd. Director, Jarin Apartment Limited Partnership Director, PPWE Co.,Ltd. Director, QTC Global Power Co.,Ltd. Director, Q Solar 1 Co.,Ltd. Honorary Advisor, Thai Electrical & Mechanical Contractors Association Advisor, Subcommittee electrical branch, Council of Engineers
In any listed companies	QTC Energy Public Company Limited
In any non-listed companies	M-DIC Holding Co., Ltd/ Jarin Apartment Limited Partnership/ PPWE Co.,Ltd./ QTC Global Power Co.,Ltd./ Q Solar 1 Co.,Ltd.
Appointment Date	28 July 2011
% of shareholding in the Company	Ordinary shares 598,600 shares, representing 0.18 percent

11. Mr. Ruangchai Kritsnakriengkrai	
Position	Director
Age	54 years
Educational qualification	<ul style="list-style-type: none"> Master of Economics ,School of Development Economics, National Institute of Development Bachelor's Degree, (Electrical Engineering) King Mongkut's Institute of Technology North Bangkok
Directorship training	<ul style="list-style-type: none"> Director Accreditation Program (DAP), Class 116/2015 Financial Statements for Directors (FSD) Class 27/2015 Director Certification Program(DCP) Class 236/2017
Work Experience	<ul style="list-style-type: none"> Deputy Managing Director, QTC Energy Public Company Limited International Sales Manager, QTC Energy Public Company Limited Sales Manager, PPC Asian Insulators Company Limited Sales Manager OEM, Gates Unita (Thailand) Company Limited Director, QTC Panco Company Limited
Current job positions	<ul style="list-style-type: none"> Managing Director / Chairman of Risk Management, QTC Energy Public Company Limited Director, QTC Global Power Co.,Ltd Director, Q Solar1 Co.,Ltd
In any listed companies	QTC Energy Public Company Limited
In any non-listed companies	QTC Global Power Co.,Ltd. , Q Solar1 Co.,Ltd
Appointment Date	13 September 2016
% of shareholding in the Company	None

Board Of Executive



1. Mr. Poonphiphat Tantanasin
Chief Executive Officer



2. Mr. Ruangchai Kritsnakriengkrai
Managing Director



3. Miss Boonpa Ruddist
Deputy Managing Director,
General Management



4. Mr. Kitti Achariyaboonyong
Deputy Managing Director, Marketing

ระบบ

SMART TRANSFORMER

Monitoring System

ระบบอัจฉริยะที่ติดตามการทำงานของหม้อแปลง
ด้วยระบบ sensor ที่ติดตามตัวแปรสำคัญ



"ANY WHERE
IN THE WORLD"



SMART BOX

ระบบส่งต่อข้อมูลตัวแปรผ่าน

3G และ 4G

ทำให้ผู้ดูแลรักษาสามารถดูข้อมูล
ได้ตลอด 24 ชั่วโมง



General and Other Relevant Information

1 General Information

Company Information

Company Name	:	QTC Energy Public Company Limited
Type of Business	:	Operating the business of manufacturing and distributing electricity Distribution transformers, including those for companies involved with electricity distribution transformers.
Main Office Address	:	2/2 Soi Krungthep Kritha 8 (5), Krungthep Kritha Rd., Huamark, Bangkok, Bangkok 10240
Factory Address	:	149 M.2 Tambol Mabyangporn, Ampur Pluakdaeng, Rayong 21140
Company Registration No.	:	0107553000158
Registered Capital	:	341,092,557 Baht
Paid-up Capital (ordinary shares)	:	341,092,557 Baht
Website	:	www.qtc-energy.com
Investor Relations	:	0-2379-3089, ext. 241
Telephone	:	0-2379-3089-92
Facsimile	:	02-379-3097

Stock Registrar

Company Name	:	Thai Securities Depository Co., Ltd.
Office Address	:	92 Stock Exchange of Thailand Building, Ratchadapisek Road, Dindeng, Bangkok 10400
Telephone	:	0-2009-9000
Facsimile	:	0-2009-9991

Auditors

Auditors	:	Mr. Narin Churamongkol, Accounting Auditor's License No. 8593 or Miss Kanyanat Sriratchatchaval, Accounting Auditor's License No. 6549 or Mr. Teerasak Chausrisakul, Accounting Auditor's License No. 6624
Company Name	:	Grant Thornton Co., Ltd.
Office Address	:	87/1 All Seasons Place, 18th Floor, Wireless Rd., Lumpini, Pathumwan, Bangkok 10330
Telephone	:	0-2205-8222
Facsimile	:	0-2654-3339

Legal Consultants

Company Name	:	Law firms CMT Limited
Office Address	:	75 Soi poungee 11 Sukhumvit Road Bangchark, PhraKhanong, Bangkok 10260
Telephone	:	081-836-7236

2 Other Relevant Information

Investors can study additional information about the Company in the Company's Annual Disclosure Form (Form 56-1) posted at www.sec.or.th or www.set.co.th and the company's website at www.qtc-energy.com.



Always on call...
whenever you need it!

No matter what, you can never predict the downtime

At **QTC**, we have a team of electrical engineering professionals always on duty, ready to provide the support and service our clients need in a most efficient and timely manner, all day, all night. Transformer maintenance checks, cleaning service, troubleshooting analysis, system testing and technical consultation... whatever support you need for your transformers - and no matter what time it is - dependable help is only a phone call away!

Business Characteristics

Business Operations of Each Product Line

1 Characteristics of products and service

1.1 Electricity Transformers

The electricity transformers manufactured and distributed by the company are custom-made or made to meet the specifications of customer orders. Customers provide product specifications such as high and low voltage, loss, impedance, vector group and temperature rise so the company can design high quality electricity transformers to meet customer needs. All of the electricity transformers sold domestically by the company are under the “QTC” trademark. For foreign supply, products are distributed under both “QTC” and customer trademarks. In addition, the main components of the electricity transformer are as follows:

1. **Steel Core** which acts as a magnetic circuit for the transmission of magnetic line of force to produce pressure on both low and high voltage coils. The steel core is made from cutting silicon steel and layering it to form a core.
2. **High Voltage** (Primary) Coils receive electric energy from high electric transmission lines and transform the electric energy into magnetic energy for transmission to a low voltage coil. High voltage coils are normally made from round copper coil soaked in chemicals and wrapped or put onto low voltage coils.
3. **Low Voltage** (Secondary) Coils act as distributors of electricity from transformers onto a load or accompanying equipment. Low voltage coils are made from flat copper coil covered by insulation or copper foil with relatively large sized wrapping on the insulator cover to be inserted onto the steel core
4. **Tanks and Tank Lids** are components that preserve transformer oil and release heat inside the transformer. The company uses the technique of producing electricity transformers hermetically sealed with prototype in a corrugated form with heat release fins attached to all the sides of the tank so the heat can be swiftly released from the inside to the outside. The fins are folded from long steel sheet making the connecting mark less visible while reducing the chance of tank leakage in comparison to previous specifications using radiator fin for heat ventilation. The tank lid is usually used to install the bussing and other tank protection equipment.
5. **Bushings** are part of the receiver or distributor of the transformer electrical current. The ingoing and outgoing wires are connected to the bushing and the inside of the bushing holds an electric conductor leading the electrical current to the coil. The bushing acts as an insulator to prevent the leakage of electricity into the tank.
6. **Transformer oil** acts as a good insulator that is high in purity and used as an electric insulator inside the transformer as in addition to helping ventilate heat from the coil inside the transformer to outside air.
7. **Taps** are equipment that changes the ratio of the coils, allowing the pressure proportion of the transformer to be at a the desired rate.
8. **Other equipment** used for protection such as tools for oil level measurement, thermometers and pressure release valves are used to measure various levels of the transformer. Once an error is detected, a warning signal is sent to control the corrective equipment and prevent severe damage to the transformer.



The electricity transformers produced and distributed by the company are divided into the following five types:

1. Distribution Transformer

Distribution transformers are equipment performing the task of transforming high voltage electricity from the Metropolitan Electricity Authority and the Provincial Electricity Authority distribution systems through distribution lines not more than 36 KV, so the electromotive force will be reduced to the same level required by the needs of customers such as industrial factories, households and high-rise buildings.

Distribution transformers can be divided into the following 3 types:



1.1 Hermetically Sealed Oil Type Distribution Transformers: This type of transformer uses transformer oil as an insulator to prevent short circuits inside the transformer and release heat from inside the coil to the outside area. The tank itself is carefully sealed to prevent external air from leaking inside and mixing with the oil. This type of transformer, therefore, is highly capable of withstanding moisture and deteriorates at a slower rate. It will also help preserve the quality of the insulator of transformer oil as well as extend the durability and reduce maintenance costs. This type of transformer is mainly installed outdoors.



1.2. Open Type with Conservator: A previous electricity transformer design that has been popular for a long time. It requires transformer oil as an insulator and heat release in the same manner as the hermetically sealed oil type distribution transformer. The difference is that it has a conservator installed to reserve the expansion of the oil during operations and a tube to let the air flow. On the end of the tube is a bulb filled with silica gel that absorbs moisture from the air before it enters the transformer. This type requires transformer inspection oil every 6-12 months.



2. Power Transformer

Power transformers are transformers used to adjust electromotive forces transmitted from power generation sources along the transmission line to reduce force before entering the distribution line and then later to the end user. The power transformers the company is manufacturing and distributing are sized at 5,000-30,000 KVA with a maximum electromotive force of 72 KV.

3. Transformers-dry (Dry Type Cast Resin Transformer)



Transformers-dry (Dry Type Cast Resin Transformer) transformer is suitable for installation in the building because of electrical insulation, dry. Do not use oil-insulated high-voltage coils series casting Resin Epoxy in Dune that has moisture resistance. The dust and the environment, and the fire resistant properties. A project that uses a transformer, dry, such as high-rise buildings. Residential building or condominium The hospital or who have limited space to use the transformer can be installed in the building. The company had invested both goods and personnel readiness for service to customers, to sell the dry transformer tested according to international standards in order to build the confidence to customers.

4. Super low loss transformer (Amorphous Metal Distribution Transformer : AMDT)

Amorphous Metal Distribution Transformer is considered as a kind of transformers with Amorphous as the axis of the transformer in lieu of silicon. The benefit obtained from this replacement has low level of No Load Loss that is considered as one-third of that of silicon axis. Consequently, this Amorphous Metal Distribution Transformer can help to save more cost of electricity. If Amorphous Metal Distribution Transformer can replace those with silicon axis in the large number, it will help to save electrical power consumption of Thailand in large amount. In addition, it also helps to relieve global warming situation indirectly by reducing emission of greenhouse gas caused by production of power plants.



5. Special Transformer

The company manufactures special types of electricity transformers that are custom-designed and produced to meet customer needs such as Earthing Transformers, Unit Sub-stations and Pad mounted transformers.



Unit Substation



Earthing Transformer



Pad Mounted

In addition to transformer production, the Company has other product lines as followings.

- 1. Smart Monitoring Box :** Smart Monitoring Box is an intelligent sensor equipped peripheral designated to monitor performance of transformers. The sensor will record important factors i.e. current, coils and oil temperature, and detect any deviations that may adversely impact the transformer performance. Smart Monitoring Box can be installed with all series of QTC's transformers.
- 2. BUSDUCT :** Widely used within high-rise buildings and large-scale industrial plants, BUSDUCT is a solution for organizing cables that transmit current to various loads. The BUSDUCT is distributed under DE BUSDUCT Brand and QTC has been appointed by DYNAMIC ELECTRICAL SDN. BHD. as the sole sales agent in Thailand. BHD. In Malaysia, DE BUSDUCT has been tested the conductivity for copper and aluminum conductors. DE BUSDUCT insulation is made of Mylar and Hybrid (Mylar insulation + Epoxy) for your choice of different use among contractors. The advantage of DE BUSDUCT is the low rate of voltage drop and more stability of electricity system comparing to general electric cables.
- 3. Solar Inverter :** Solar Inverter converts direct current (DC) in solar panels to alternative current (AC). QTC has been appointed by Huawei Technology (Thailand) Co., Ltd., as a sales agent for the brand Huawei.



1.2 Services

All services provided by the company are related to 24-hour transformer usage. Our highly experienced engineers and technical experts are ready to support and assist customers who have purchased QTC electricity transformers, as well as general customers. In cases where an electricity transformer belongs to the QTC brand, the details regarding emergency contact information are placed on the sides of all transformers. The electricity transformer-related services provided by the company include the following:

- Electricity transformer installation
- Inspection and maintenance according to the product cycle
- Restoration and maintenance of the electricity transformer
- Filling oil into the electricity transformer
- Electricity transformer rental
- Electricity transformer testing
- Advice on electricity transformers and electrical systems
- Service on steel cutting and coil wiring



2 Marketing and Competition

2.1 Competitive Strategy

1. Product Quality

The company is firmly committed to policy for constant development in the quality of the electricity transformers to comply with international standards from design to the selection of raw materials for production. Quality inspections are frequently conducted for the raw materials frequently purchased. The company's electricity transformers have been designed by a computer system that increases and precisely controls loss under the supervision of experienced engineers in the design field. Furthermore, the technology employed by the company in power plants is up-to-date and highly developed. The main machines used are imported from Germany and all of the production process, up to the products delivered to our customers, have been tested and controlled. All the company's operations described above have been adopted to ensure that products are standardized and customized for customer satisfaction. The company's products are clearly certified by ISO 9001:2008, and all of the electrical sizes and types of electricity transformers available in the market are certified with Thai Industrial Standards 384-2543. and all passed short circuit resistance testing by CESI, Italy. The 167 KVA has also passed short circuit resistance testing from KEMA, in the Netherlands. Both institutions are world famous testing institutes capable of ensuring the quality and durability of the coil and internal structure of electricity transformers.



2. Speed and Reliability in Product Delivery

Delivering products on schedule is another important factor considered by customers when deciding to purchase products from various suppliers. Most of the customers have a timeframe that is exact, especially those in the state enterprise sector that produce and distribute electricity or customers who have won price bidding for entire projects. If QTC is unable to deliver products on time, it may cause delays for the customer's projects and our company may be required to pay fines according to purchase/sales agreements. Therefore, our main policy is to deliver products on time to maintain customer satisfaction and ultimately build trust and loyalty, as well as brand promotion for our company.

3. Effective Capital Management

The company gives importance to the efficiency of capital management, which is a main cost with impact on the company's profit and competitive capacity, beginning with the selection of raw materials. A team of experts selects the manufacturers and/or suppliers who are required to pass inspection testing on their production processes to ensure the quality of the raw materials and reduce loss from production caused by low quality raw materials. In addition, the company has adopted the ERP system to plan the purchasing of raw materials to help control the amount of raw material production at acceptable and sufficient levels. Since the ERP system has linked information from all departments since orders began to be accepted from the customers, the system takes the orders and plans for production and raw material purchases.

In addition, the company has planned a production and technological production system to help save production costs as well as maintain product quality. Applying the Wound Core technology for steel core production, this technology will reduce steel input.

- Silicon and loss of silicon steel could reduce overall production costs
- Finding alternative raw materials for wider options and helping manage capital would be very efficient, e.g. copper foil or paper-wrapped flat wire is an important component for wrapping low voltage coils.

However, the selection of each raw material depends on the specifications of the electricity transformers requested by the customers.

4. Acquiring Experienced Staff and Experts in the Electricity Transformer Industry

With the company's team of directors, architects, and most of the staff with experience and expertise in the electricity transformer industry for over 44 years and having passed the training of world-renowned electricity transformer manufacturers from both Germany and Japan, the company is able to help develop technology both in terms of design and improve the production process for higher efficiency. The machines are therefore high tech and able to reduce production process, causing cost to be lower and able to compete well with competitors in the business. Also, the sales department has experience in the sales and marketing field for over 25 years, making them understand customer's demand and in-depth electricity transformer market condition. They are therefore able to command strategies which are suitable for each situation perfectly.

5. Trade Alliances and Good Relationship with Distributing Agents

In 2019, 14.88% of income from net sales of electricity transformer comes from distributing agents, both domestic and abroad. As of 31 December, 2019 the company has a total of 5 agents domestically and 8 agents abroad; covering Malaysia, Australia, South Africa, and Europe. Also, the company is focused on maintaining and developing relationship with the agents continuously. Also, to maintain good relationship among other companies in the market and distributing agents to share information for product and quality development, as well as service. This allows the company to improve product quality to directly serve needs of the customers at a high standard.

6. Post-Sale Services

The company offers after sale service by experts in electricity transformer to give advice and suggestions on problem solving 24 hours to customers. This service will not only impress the customers but allow the company to be aware of the existing problems caused by the product directly from the customer. The company will be able to take the complaints to develop and fix the product accordingly. The product will therefore have high quality and fully respond to customer's demand. Since the electricity transformer has high quality, we can ensure this by offering 2 year product warranty.

2.2. Characteristics of Customers

Customers of our company can be divided into 2 main groups as follow;

1. Domestic customers

Domestic customers of the company could be divided into 4 categories as follow;

1.1 State and state enterprise

State and state enterprise is a group combined of the main customer who is the electricity state enterprise producer and distributor. This includes The Provincial Electricity Authority (PEA), The Metropolitan Electricity Authority (MEA), Electricity Generating Authority of Thailand (EGAT), and other state and state enterprise customers such as, Ministry of Public Health, Public Works Department, and Royal Irrigation Department.

1.2 Project Contractors

This customer group ranges from small to large project contractors This type of customer includes Powerline engineering public company limited. Italhai development public company limited, and Demco public company limited.

1.3 Distributing agents

Customers who are distributing agents and then onwards to end users. The company has a total of 3 distributing agents. Each agent id responsible for distributing the electricity transformer and offering service in their area of responsibility. This will help with marketing and service provided by the company to fully cover all the area.

1.4 Project or factory owners

This group of customer will purchase electricity transformer to use in their own factories or buildings such as Advance Pepper Mill Company Limited, True Universal Convergence Company Limited and Betagro Public Co., Ltd.

2. Foreign customers

2.1 Distributing agents

Currently, the company has 8 agents covering electricity transformer distribution sale areas more than 30 countries. where the income from export (60.61%) mainly comes from selling through distributing agents.

2.2 Other customer groups

Other customer groups include contractor and trading firm which will purchase electricity transformer from the company and deliver it to end users in various industries such as paper industry, petrochemical industry, palm oil industry, textile industry, and electronic industry.



Chart showing revenue from each distributing channel by customer type

Customer Type	2017		2018		2019	
	Million Baht	%	Million Baht	%	Million Baht	%
Revenue from domestic sales						
(1) State and state enterprises	285.21	33.98	181.59	23.08	271.52	34.79
(2) Distributor	21.42	2.55	13.48	1.71	12.71	1.63
(3) Private	290.96	34.66	313.85	39.90	255.50	32.74
Total income from domestic sales	597.59	71.19	508.92	64.69	539.73	69.17
Revenue from foreign sales						
(1) Distributor	192.31	22.91	168.35	21.40	103.56	13.27
(2) Private	49.48	5.90	109.43	13.91	137.06	17.56
Total Revenue from Foreign Sales	241.79	28.81	277.78	35.31	240.62	30.83
Total Revenue from Sales	839.38	100.00	786.70	100.00	780.35	100.00

2.3 Pricing policy

The company has a policy towards pricing that follows the cost plus margin rule which will be different according to each customer type and consider the competitive condition in each market- both domestic and foreign, respond to the product of each customer group which takes in consideration of the product quality and effective after-sale service.

2.4 Details of the company's distribution channel could be categorized as follow;

1. Distribution through auctioning

Auctioning through price bidding is one of the main distributing channels for customers who are state enterprise producer and distributor of electricity. The process of bidding will begin with price offering. After the company studies information and analyze details of the electricity transformer to arrange documents and calculate price which will be offered. Documents used for price offering are divided to document presenting the qualification of the bidder and technical documents. Companies entitled to participate in price bidding must pass the basic qualifications in price offering. Once the company wins the bidding, trading contract of the model and time period will be written, along with the security guarantee- most value of the guarantee is 10% of the bidding price.

2. Distribution through distributing agents

In consideration to establish the distributing agents, both domestic and abroad, the company focuses on experience in business, proficiency in marketing, experience in the area, financial condition, and readiness of the agents. A contract will be written for each agent, in case there are more than one agent in each country, the company will determine the area of responsibility of each agent. Distributing agents will act as a channel for distribution of the company's products. They will be responsible in marketing of the electricity transformer in each area, including giving service and maintenance of the purchased product. The company will in addition give technical support to the agents and these agents are also responsible for seeking trend of the product in their respective country of duty so that the existing product will be developed to respond directly to the market demand. Distributing via distributing agents will help the company save management cost since products are sold to distributing agents are outright and agents distribute them directly to customers.

On December 31, 2019, the company has a total of 5 agents domestically and 8 abroad- covering Sale areas more than 30 countries

3. Distributing directly to customers

Marketing officer and/or sales officer will directly contact the customers and take advantage of director's relationship with the customers to find channels to continuously reach the customers. They will present and give information regarding the product and take them to visit the company's factories. This group of customers include; contractor, architecture, and customers who use the products directly such as industrial factory.

3 Product provision

3.1 Production

The Company's plant is located at 149 Moo 2, Pluak Daeng-Huay Prab, Mabyangphon, Pluak Daeng District, Rayong, in a 32 rai piece of land. Nearly all electrical transformers are made-to-order transformers. The Company has a policy to manufacture

electrical transformers that meet the specifications required by customers and primary emphasis on quality and standards. In addition, modern design and production technologies are used with machines as steel slitter machines, steel cutting machines, coiling machines, ovens, etc., all of which are imported from Germany and other leading manufacturers. Additionally, electrical transformer testing procedures concur with internal standards and are computer-controlled.

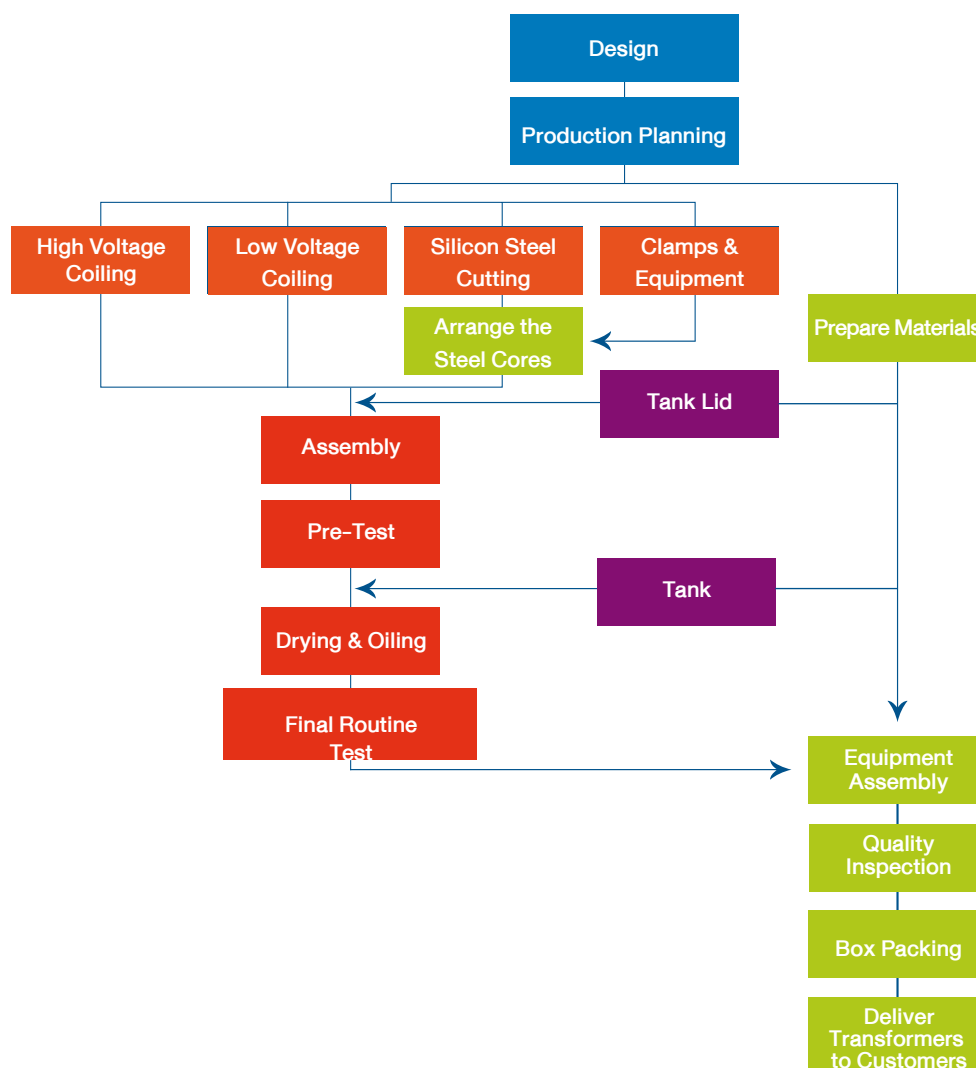
In order to accommodate future business growth, in 2019 the Company remains determined in applying the TQM system for continual improvement of manufacturing and production planning processes with the primary objectives of reduced production time for increased production capacity and line balancing in order to reduce loss such as from waiting and over production and with focus on complete utilization of production capacity. And in 2019, the Company's body manufacturing factory managed to manufacture transformer bodies at full capacity, enabling the Company to reduce transformer body purchase orders from outside, thereby reducing transformer body manufacturing costs and enhancing production planning efficiency.

3.2 Production Capacity

	2012	2013	2014	2015	2016	2017	2018	2019
Production Capacity (KVA)	1,215,000	1,482,000	1,701,000	1,715,000	1,722,000	1,694,000	1,715,000	1,708,000
Production Amount (KVA)	1,379,748	1,236,562	1,322,535	1,791,847	1,148,604	1,659,651	1,490,595	1,206,278
Production Capacity Rate (%)	113.56	83.44	77.75	104.48	66.70	97.97	86.92	70.63

In 2019, the production dropped by 19.07% because the company focused on selling transformer to the customers who can give high profit. As a result the company received lower sell volume and caused decreasing production.

3.3 Manufacturing & Production Processes



The Production Process for Company's Distribution Transformers is as follows:

1. Design

The company's electric transformers are custom-made to meet customer orders. The transformers are completely designed by using a modern computer program with high accuracy and capable engineers with extensive design experience to ensure the results meet the customers' specifications and purpose. The computer design can show immediately results as outline drawings.

2. Production planning and equipment preparations

The electric transformer's order information from customers is entered into the ERP system and used for the purchase plans of raw materials and equipment, including the production plan. The planning will include updates to the production plans for punctual delivery as per customer orders which will require close cooperation between the Sales, Production, and Procurement Departments.

3. Silicon steel cutting and steel core arrangement

The company uses silicon steel cutting machines from Germany controlled by a computer system, thereby making it possible to cut silicon sharply, quickly and precisely in which the computer will calculate the drilling locations of the steel core and cut silicon steel at the same time, fully preserving the electrical properties of the silicon steel core. The silicon sheet will then be cut to shape and sent to the steel arranging section. For steel arrangement, the steel pieces will be placed in overlapping levels (Step-Lap) using a stacking table. The aforementioned step-lap method results in no-load loss, exciting current of the steel cores and will reduce the transformers, thus reducing noise disturbance and costs for the loss values.

4. Primary (High Voltage) and Secondary (Low Voltage) Coiling

The company uses copper foil as the raw material used for primary coiling instead of using paper-insulated flat wires as in the past, thereby giving the transformer maximum resistance to power surges and short circuits because the copper foil has better current distribution properties combined with the secondary coiling using the long layer method with a high voltage winding machine to control the tension and arranging the wires with a computer system to make the quality of each coil layer meet uniform tension standard which will increase the effectiveness and quality of the coils.

5. Assembly of Wire Coils and Steel Cores

This step takes place when the wire coils are assembled with the steel cores in which the primary coil is assembled near the steel core and the secondary coil is placed on top of the outer part of the primary coil. Next, these are assembled with the upper yoke in combination with the installation of the tank lid, bushing and tap changer, and the internal wiring as in the design.

6. Pre-Testing

Once the steel core and the primary and secondary coils have been assembled, the Testing Department will then perform preliminary testing of the electric transformers as follows:

- Measurement of Winding Resistance
- Measurement of Turn Ratio
- Checking of Polarity or Vector Group
- Megger Testing

7. Drying and Oiling

In the drying of electric transformers, the company uses a modern vacuum oven controlled by a computer system from Germany. Furthermore, the company is the only company in South East Asia to use Electric Low-Frequency Heating technology to remove moisture from the electric transformer by directly delivering low frequency electrical currents to the coils of the electrical transformer in a vacuum environment which is a way to transmit heat from the inside to the outside. This method will remove moisture from the innermost part of the coils in a short time compared to the heater which is a method used to heat the coils from the outside, but unable to remove all moisture. Furthermore, the company also uses technology for oiling the transformer in a vacuum oven in a way for the oil to fully infiltrate the insulation system and can prevent 100% of moisture from coming in to contact with the inside of the transformer, which effectively extends the transformer's usage life.

8. Final Routine Testing

After the transformers have gone through all of the procedures, all transformers will be required to go through a final routine test. The company's testing equipment is controlled by computer and calibrated regularly, thereby yielding test results that are accurate and precise with ability to report test results immediately. The testing list is composed of the following:

- Measurement of winding resistance
- Measurement of voltage ratio and check of phase displacement
- Measurement of short circuit impedence and load loss
- Measurement of no-load loss and current
- Separate source AC withstand voltage test
- Short-duration induced AC withstand voltage test
- Measurement of insulation resistance
- Oil dielectric test
- Leakage test

3.4 Procurement of Raw Materials

The main materials used in the manufacturing of the Company's electrical transformers are silicon steel, coated round wires, transformer body unit, copper foil and transformer oil. The Company purchases these raw materials from both domestic and foreign manufacturers and/or suppliers. Accordingly, the factors considered as a policy by the Company in the purchase of raw materials are as follows:

1. Raw Material Quality

Since the Company makes it a main policy to give importance to product quality, the Company emphasizes quality raw material purchases from capable manufacturers or suppliers that can deliver quality raw materials according to specifications in full quantities and according to schedule. Accordingly, the Company has an approved vendor list for screening for quality manufacturers and suppliers. Moreover, the Company has procedures in place to test the quality of raw materials and conducts visits and inspections on new manufacturing factories before approving them to become manufacturers or suppliers of the Company. Furthermore, the Company reviews assessment results every six months based on the quality and history of raw material deliveries. Additionally, the Quality Assurance Unit (QA) conducts a random inspection of raw materials every time a vendor delivers raw materials in order to ensure guarantee the quality of raw materials used in the manufacturing of the Company's goods.

2. Raw Material Delivery Time

Domestic purchases generally has a delivery time approximately at 15-30 days, depending on the type of materials. On the other hand, raw materials ordered abroad takes approximately 45-90 days to be delivered because an allowance has to be made for shipping time based on the country of the purchase. Therefore, for the most part if raw materials are ordinary or if domestic manufacturers or suppliers can provide materials with similar quality to those offered by foreign manufacturers or suppliers or meet the quality specifications of the Company, e.g., solution-coated round wires, paper-coated band wires, solution-coated band wires and other transformer components, the Company order the aforementioned materials from domestic sources due to the shorter delivery time that allows more convenient and effective inventory management.

3. Prices of Raw Materials and Price Trends

In particular, silicon steel and copper are commodities with prices that fluctuate based on prices in the global market. Therefore, in ordering raw materials in each occasion, the Company has to consider the quantity of materials to be purchased combined with suitable delivery time. Accordingly, the Company closely monitors changes and trends in raw material prices to effectively management raw material costs.

4. Exchange Rates

Because the Company purchases raw materials from abroad for 36.12 percent of all raw materials, the Company closely monitors changes in the exchange rates of important financial currencies and appropriately enters into foreign currency purchase/sales contracts in advance in order to avoid risks from fluctuating exchange rates.

5. Avoidance of Dependency on Few or a Single Manufacturer or Supplier

The Company has policy to procure raw materials from many manufacturers or suppliers. For each type of materials, especially silicon steel, solution coated round wires, electrical transformer body, copper foil and transformer oil, the Company makes purchases from only 2-3 main manufacturers or suppliers because the aforementioned manufacturers and suppliers each have specified minimum purchase orders based on prices and delivery times of the aforementioned materials.

Table Showing Ratios of Domestic and Foreign Raw Material Purchases

	2017		2018		2019	
	Million Baht	%	Million Baht	%	Million Baht	%
Domestic Raw Material Purchases	403.35	397.58	397.58	69.40	263.11	61.64
Foreign Raw Material Purchases	177.87	142.65	142.65	31.60	163.72	38.36
Total Raw Material Purchases	581.22	540.23	540.23	100	426.83	100

The Company's main raw materials are described as follows:

1. Silicon Steel

Silicon steel is considered an important material in the manufacturing of electricity transformers with a calculated percentage of total raw material purchase value of 17.45 percent and 24.94 percent in 2018 and 2019, respectively. The Company primarily imports silicon steel from the Republic of South Korea and partially from Japan. These purchases are made in advance on a quarterly basis. However, since high-quality silicon steel for electrical transformers has few manufacturers, there is a limited quantity of silicon steel that is manufactured. Therefore, the Company has to manage purchases to ensure sufficiency with usage requirements and successfully manufacture electrical transformers to customers on schedule.

2. Solution-coated Round Wires

Solution-coated round wires are a raw materials used in high-power coiling or high-power wire coils for receiving electrical energy from high-power transmission lines for conversion into magnetic energy circulating inside a steel core to transfer energy to the low-power coils. Accordingly, purchases are made from domestic manufacturers that offer quality similar to or equivalent to foreign raw materials but with a shorter delivery time, which thereby allow the company to more effectively manage inventories.

3. Electrical Transformer Body

In 2019, additional transformer body factories built by the Company were able to produce at full capacity. therefore the company could improve productivity. Consequently, the company could reduce the orders of transformers from outsiders helping to reduce manufacturing cost and respond to demands of transformers with short period of delivery. In addition, the company was also able to control quality as defined by customers in order to improve competitiveness. However, the company still orders some transformers from 1-2 domestic manufacturers as proper based on nature, Bill of Quantity, price, and delivery duration.

4. Transformer Oil

Transformer oil is oil produced specifically for use in electrical transformers and has good insulation properties, which functions to remove heat from inside the transformer to outside for ventilation. In transformer oil purchases, considerations are based on manufacturing plans, whereby purchases are made in advance from domestic manufacturers and suppliers, in order to prevent material shortages. Accordingly, the purchase department regularly monitors changes in oil prices in the global market to effectively manage transformer oil purchases.

5. Copper Foil

Copper foil is a raw material used in low-power coiling or low-power coils that function to distribute electricity from the transformer to load or connected devices. For copper foil, the Company purchases from both domestic and foreign manufacturers and jointly develops capable domestic manufacturers to enable purchases from domestic manufacturers that meet international standards for the Company to effectively manage raw material quantities.

3.5 Environmental Impact

Throughout the past, the Company has never had disputes or legal cases concerning environmental issues. Moreover, the Company emphasizes electrical transformer designs that reduce energy consumption and are friendly to the environment, and the technologies used in the production processes effectively reduce energy consumption and environmental pollution. In 2013, the Company began to produce amorphous distribution transformers, a type of transformers that conserves energy and prevent energy wasted in steel cores by up to 70 percent. Additionally, the paints sprayed on transformers are primarily water-based paints that are not harmful to people and the environment and the de-humidifier and oil filling systems used decrease energy consumption and emission of hot vapors to the air.

Furthermore, the Company is certified for the Environmental Management Standard ISO 14001: 2004, which is proof that the Company has control and production improvement systems and environmental management plans to visibly decrease or prevent environmental impacts in concurrence with set standards. In addition, in 2015 the Company became certified with the Green Industry Level 3 by the Ministry of Industry, and in 2016 the Company released its greenhouse gas emission report based on 2015 and became certified by Thailand Greenhouse Gas Management Organization (Public Organization) and certified for greenhouse gas emission pursuant to the ISO 14064-3: 2006 standard by SGS (Thailand) Co., Ltd.

4. Research and Development

The Company continues to give importance to product research and development in order to achieve good product qualities that meet customer needs and competitive potential. Throughout the past, the Company has always been able to develop products with competitive quality in every market worldwide with improved effectiveness in manufacturing processes. In 2019, the Company's total spending exceeded Three million baht.

1. Project development of Intelligent System Storage Transformers version 3 (Smart Transformer system V.3)
2. Transformer Body Robot Welding Process Development Project
3. High Voltage Coil Production Process Development Project



Revenue Structure

Revenue Type	2017		2018		2019	
	Million Baht	%	Million Baht	%	Million Baht	%
Revenue from Electricity Distribution Transformer Sales	875.45	95.70	929.18	94.98	929.97	94.31
- Revenue from Electricity Sales	36.06	3.94	142.48	14.56	148.69	15.08
- Revenue from Domestic Transformer Sales	597.59	65.32	508.92	52.02	539.73	54.74
- Revenue from Overseas Transformer Sales	241.79	26.43	277.78	28.39	240.62	24.40
- Revenue from Busduct and Inverter					0.93	0.09
Revenue from Raw Material Sales 1)	6.67	0.73	8.11	0.83	7.19	0.73
Consolidated Revenue from Sales	882.11	96.43	937.29	95.81	937.16	95.04
Revenue from Service Provision	19.42	2.12	20.76	2.12	28.01	2.84
Other Revenue 2)	13.28	1.45	20.29	2.07	20.88	2.12
Total Revenue	914.82	100.00	978.34	100.00	986.05	100

Remarks: 1) Revenue from raw material sales is revenue occurring as a result of the sales of raw materials used as a component for the manufacture of electricity transformers to customers, such as transformer oil, low voltage terminal lugs, bushing gasket sets, etc.

2) Other revenue comprising revenue from scrap sales, profit from exchange rates, interest receivable, etc.



Industry and Competition Situational Analysis

Domestic Market

The electricity transformer manufacturing industry is related to the electricity industry, a basic necessity that plays an important role to the daily lives of people and national economic growth, because electricity transformers are equipment used to reduce the voltage of electrical currents sent from a power source at a level that suits the needs of users such as residents in homes, industrial factories, malls, or high-rise buildings such as hotels, condominiums and office buildings. Therefore, the growth of the electricity transformer industry is adjusted according to annual electricity requirements, which depend on primary factors composed of population, industrial and economic growth.

Since electricity is necessary for living and economic growth, electricity users comprise a diverse range of users in industry, business, agriculture and homes. According to the graph below, which shows the amount of electricity used by user type, it is obvious that the industry sector has the highest proportion of electricity use, followed by Household and businesses. And in 2019 (January – September), the electricity used by the aforementioned sectors amounted 65,193 GWh, 37,799 GWh and 37,388 GWh, or proportions of 44 percent, 26 percent, and 26 percent of all domestic electricity consumption, respectively.

Graph showing the types of electricity users from 2016-2019 (Jan. – Sep.)

Branch	Electricity consumption					
	GWh				2019 (Jan-Sep)	
	2016	2017	2018	2018	growth	share
				(Jan-Sep)	(%) YoY	(%)
Household	43,932	44,374	45,205	37,799	11.7	26
Business	44,639	45,100	46,764	37,388	6.9	26
- Department store	5,086	5,154	5,235	3,879	4.2	
- Apartments and guest houses	4,458	4,600	4,831	3,897	15.8	
- Hotel	4,210	4,228	4,363	3,317	3.7	
Industry	86,878	87,772	87,829	65,193	-1.2	44
- Food	10,873	11,362	11,228	8,177	0.2	
- Iron and base metals	7,176	7,861	7,913	5,341	-9.5	
- Electronics	7,034	7,248	7,294	5,136	-5.9	
Other**	7,398	7,878	8,034	6,393	6.6	4
Total	208,481	215,496	215,496	166,310	2.3	100

**A non-profit organization that pumps water for agriculture, temporal electricity, public electricity, and others.

Remarks: 1. Changing (%) compared with the same period of the year

2. Consumption of electricity in business and industrial fields exhibiting information of 3 types of specific businesses and important industries only

Source: Energy Policy and Planning Office, the Ministry of Energy

Apart from economic growth influencing the aforementioned demands for power, population growth is a significant factor determining national power demand. Thailand's continual population growth has resulted in community expansions and increased investment in the transmission system by the Provincial Electricity Authority and the Metropolitan Electricity Authority responsible for power distribution to power users in the country. Hence, the demand for electrical transformers in the power transmission system has escalated.

As previously mentioned, power is a basic, essential energy. Inadequate amounts of power for consumer demands will affect the living conditions of the public and the overall view of businesses and the national economy. In cooperation with the Electricity Generating Authority of Thailand, therefore, the Ministry of Energy has prepared the latest Thailand Power Development Plan. This plan is the Thailand Power Development Plan 2015 – 2036 (PDP 2015) approved by the National Energy Policy Office (NEPO) in a meeting held on 14 May 2015 and approved by the Ministerial Cabinet on 30 June 2015. The preparation of the aforementioned Power Development Plan was based on projections on Thailand's future power needs for the first time.

Thailand Power Development Plan of 2015 – 2036 (PDP 2015)

According to the guidelines for preparing the aforementioned plan, the Thailand Power Development Plan of 2015 – 2036 (PDP 2015) can be briefly summarized as follows: At the end of the plan in late 2036, Thailand will have a total net power production capacity of 70,335 megawatts composed of the current power production capacity from the end of 2014 of 37,612 megawatts and production capacity of expired power plans in 2015 – 2036 will be released at 24,736 megawatts.

Power Production Capacity in 2015 – 2036

- Power Production Capacity in December 2014	37,612	megawatts
- New Power Production Capacity in 2015 – 2036	57,459	megawatts
- Power Production Capacity Released in 2015 – 2036	- 24,736	megawatts
- Total Power Production Capacity at the End of 2036	70,335	megawatts

Power Production Capacity in 2015 - 2036

New power production capacity in 2015 – 2036 will be equal to 57,459 allocated in the following power plant types:

Renewable Energy Power Plants	21,648	megawatts
-Domestic	12,105	megawatts
- Foreign Power Purchases	9,543	megawatts
Pumped Storage Power Plants	2,101	megawatts
Cogeneration Power Plants	4,119	megawatts
Combined Cycle Power Plants	17,478	megawatts
Thermal Energy Power Plants	12,113	megawatts
- Coal/Lignite Power Plants	7,390	megawatts
- Nuclear Power Plants	2,000	megawatts
- Gas Turbine Power Plants	1,250	megawatts
- Foreign Power Purchases	1,473	megawatts
Total	57,459	megawatts

New Power Production Capacity in 2015 – 2026

At this phase of the plan (first ten years), power plant projects are mostly projects with contract obligations aimed at reinforcing power system security in key risk areas by having a new power production capacity of 36,804 megawatts as follows:

Renewable Energy Power Plants	10,644	megawatts
- Domestic	8,101	megawatts
- Foreign Power Purchases	2,543	megawatts
Pumped Storage Power Plants	1,300	megawatts

Cogeneration Power Plants	4,119	megawatts
Combined Cycle Power Plants	14,878	megawatts
Thermal Energy Power Plants	5,863	megawatts
- Coal/Lignite Power Plants	4,390	megawatts
- Foreign Power Purchase	1,473	megawatts
Total	36,804	megawatts

International Markets

The factors affecting power demand in foreign countries are economic growth and world population growth. The Energy Information Administration (EIA) in the US estimates electricity in each continent around the world until the year 2035, which have an average growth rate of approximately 2.30 % per year. The growth of power production of countries outside the Organization of Economic Cooperation and Development (OECD) to be considerably higher than that of OECD countries at 3.3% versus 1.1%, respectively. Asian countries outside OECD are the places where power production growth is the highest at 4.1% per year. Thus, current trends indicate growth for the demand for transformers to be higher than in other regions.

Australia, one of the company's key transformer exporting markets, which have sale revenue 35% of all total revenue of 2019. The Australian market is a large market with a strong industrial sector. The company have encouraged to expand regional foreign markets in Laos, Cambodia, Myanmar, Malaysia, the Philippines, Singapore and Bangladesh. These are developing basic industries such as the mining industry, power plants, industrial estate constructions, manufacturing industries and continually increasing investment from overseas to mitigate risks and expand customer bases. Our company has the capacity to manufacture transformers meeting international standards, thus we believe the company's transformer products can compete in the world market. Thus, there is a chance for consistent growth for the company's transformer exports in the future.



Competitive Conditions

The transformer market can be divided into the electricity transformer market for power systems and the electricity transformer market for distribution systems. Previously, all of the company's sales were from distribution transformer. There are about 24 manufacturers in the power distribution transformer comprising of small manufacturers that emphasize price strategy rather than quality, and medium and large manufacturers that focus on product quality. Therefore, each group of manufacturers has different customer groups. The company is a medium-sized manufacturer producing high quality transformers to support the work operations of both public and private sector companies. The company's products are TIS 384-2543 accredited and have passed short circuit testing by the CESI in Italy and the KEMA Institute of the Netherlands. Thus, the company's product quality is accepted by domestic and foreign customers; furthermore, our quality is constantly improving. These improvements are constantly enhancing the company's competitive capacity to equal to exceed that of larger manufacturers. Small manufacturers focusing on small groups of customers and putting emphasis on price strategy without giving consideration to product quality are not in the same market with the company.

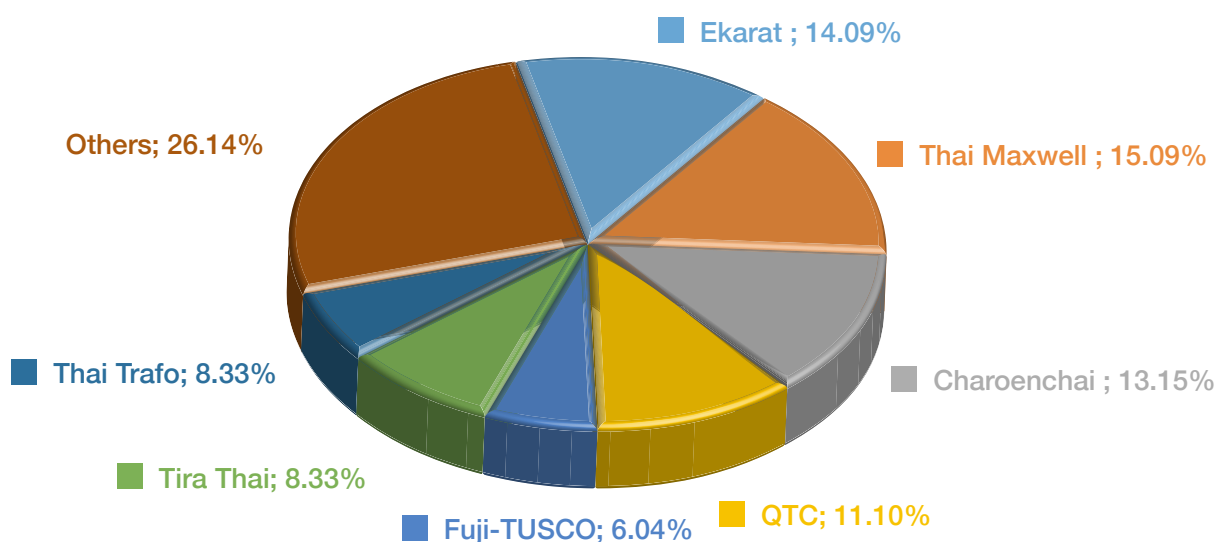
New manufacturers entering the industry and developing electricity transformer manufacturing processes in order to achieve quality meeting international standards are difficult because they require costly investments for machinery. More importantly, know-how and advanced technology with skilled personnel and production expertise are also essential. Thus, domestic competition comes from about seven manufacturers with technology and ability to manufacture high quality transformers. These manufacturers all require manufacturing technology to enable their products to produce high quality transformers accepted by customers. The company manages production costs in order to achieve maximum efficiency with the goal of building capacity for consistent and sustainable competition. In addition to product development, we also emphasize building good relationships with every customer group to maintain customer bases and continually expand customer bases to have coverage. We can be considered as an organization that pays attention to every step and detail in line with our slogan, "Quality of Detail".

Currently, we are the first and only energy-efficient transformers supplier in Thailand, certified by the Metropolitan Electricity Authority, and offers an innovative transformer that can reduce power consumption by more than 35% with payback period of no more than 5 years. The company's products have passed short circuit test from CESI, Italy, enabling customers to be confident in their products and services other than general transformer. It suffices to say that QTC transformer is leader in energy-efficient technology.

Market share

In the years 2018, The overall value of the market was still similar to that of 2017 whereas each manufacturer had the following marketing shares:

Transformer Market Share 2018



Source : Department of Business Development

Risk Factors

The company is aware of various aspects of risk management and makes considerations and monitors the impacts of situations that potentially create risks to the company's business operations on a regular basis in order to ensure thorough and effective risk management. The company has formed the Risk Management Committee and a work committee in which high-ranking executives are involved to analyze various risk factors and assess potential risks in order to obtain adequate risk prevention or management. Furthermore, the Risk Management Committee reports to the Audit Committee and the Board of Directors for acknowledgement and considerations by at least once every three months. The risks that are significantly influential to the company are summarized as follows:

1 Risks of Revenue Fluctuations and Dependence on Large Customers

The company has revenue from the sales of electricity transformers to customers who produce and distribute state enterprise electricity composed primarily of the Metropolitan Electricity Authority (MEA) and the Provincial Electricity Authority (PEA). The aforementioned customers amount to approximately 25-36 percent of overall sales revenue with a high proportion potentially affecting the company's income if lost. Furthermore, revenue generated by the sales of electricity to the aforementioned group of customers is primarily dependent upon the company's ability to win project auctions, economic conditions and budget of each agency. Therefore, if the company loses auctions, or if auction dates are changed, or investment budgets for the purchase of electricity transformers decrease, the company's revenue and performance results will decrease. Thus, the company is shifting focus its to expanding its customer base in the private sector and export sector. In 2019, the proportion of electricity transformer sales for exporting to sector customers was 31% and sale proportion of public sector was 34% and the overall sale proportion of state enterprise was 35% . Moreover, the company has given consideration to increasing product diversity to meet the demands of all customer groups. At present, the company is capable of producing electricity transformers with up to 30 MVA and maximum electrical system of 72 kV and developed the capacity to manufacture Super Low Loss Transformer (amorphous electricity transformers), which are no-load-loss transformers.

2 Risks from Fluctuations in Raw Material Prices

The main raw materials used in transformer production comprise silicon metal, coated round wires and copper foils. The prices of the aforementioned raw materials will fluctuate according to the prices on the world market, which depend on supply and demand in the global market. In the past, the prices of silicon and copper underwent great fluctuations. Therefore, if the costs of raw materials increase rapidly, there may be impacts on the company's sales costs and gross profit margins because the company is unable to adjust product prices at an equal or higher rate than the aforementioned increase in raw material costs, which will have eventually have impact on the company's business performance. However, because the company has policies for setting product prices in line with costs added to the company's gross profit, the company is constantly checking the prices of raw materials, especially raw materials with highly fluctuating prices in order to be able to estimate production costs accurately and as near to real costs as possible so product prices can be set properly. Moreover, the fact that the company's executives have over 30 years of experience in the industry and good relationships with raw material suppliers enables the company to have reliable estimates for raw material price trends.

3 Risks from Foreign Exchange Rates

The company imports raw materials from foreign countries and exports products for distribution to foreign countries. In 2019, the company had revenue from the sales in foreign currency equal to 243.13 million baht, which was 25.94 % of all sales revenue. At the same time, the company has also ordered the purchases of raw materials from foreign countries equal to 155.00 million baht, which must be paid in foreign currencies, thereby enabling the company to partially reduce risks from exchange rate fluctuations with natural hedges. However, the company realizes the importance of preventing the aforementioned risks. The company's Finance & Accounting Department will closely monitor the news and movements of exchange rates and the company will consider preventing risks by using forward contracts according to situations and necessity. Moreover, in the sales of transformers to foreign customers, the Sales Department will calculate transformer prices by using mark-ups for foreign exchange rates to cover the costs of risks and fluctuations, which will help minimize risks from fluctuations of exchange rates to a certain degree.

4 Risk from Investment in other businesses

In 2019, the company started to invest in domestic and overseas energy business, related to transformer business through operation of QTC Global Power (Limited): QTCGP, a subsidiary company. As the company lacked personnel with expertise in energy business, thus the company recruited specialists on investment and hire dedicated consultant to conduct feasibility study of the project and effects on economy, society and environment. The results will be proposed to the shareholders before making the investment decision. The Company pays attention to risk management in new business by buying investment risk insurance and follow-up closely in order to maintain the best interests for shareholders.

Shareholder Structure

The Company's Top Ten Major Shareholders, as of 27 December 2019, which is the book closing date, is described below:

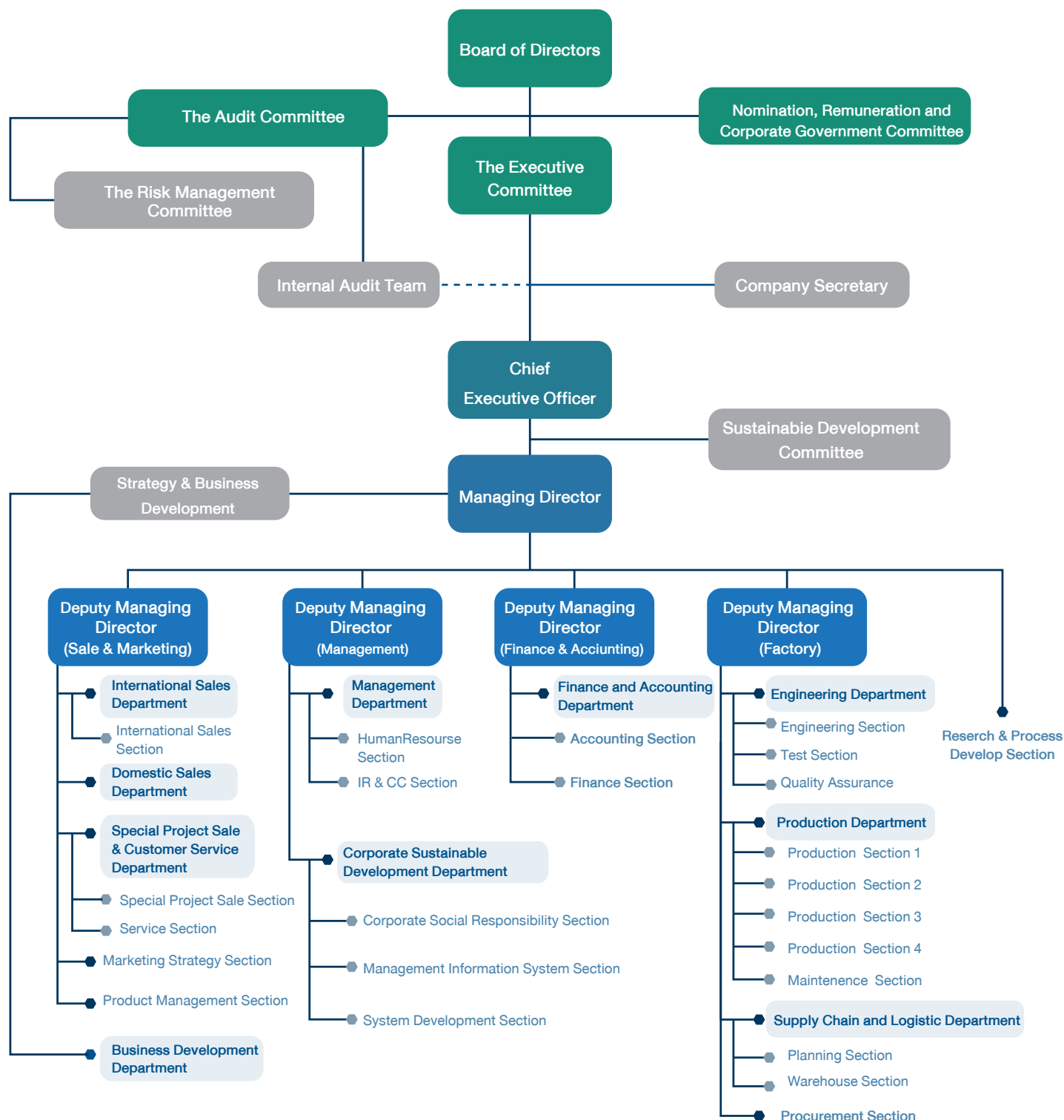
Top Ten Major Shareholders as at December 27 , 2019			
No.	Shareholder	Number of Shares (Shares)	Shareholder Ratio (%)
1	1.1 Mr. Litsamy Latsavong	42,500,000	12.46
	1.2 Mr.Phoukhaoka Mathouchan	42,500,000	12.46
	1.3 Mr.Phoukhaokham Pravoraxay	40,000,000	11.73
	A Group of Foreign Investor have shares totally	125,000,000	36.65
2	Tantanasin Group		
	2.1 Miss Sasikarn Tantanasin	22,182,700	6.50
	2.2 Mr. Patcharapong Tantanasin	716,000	0.21
	2.3 Mrs. Alisara Charuenvanich	602,600	0.18
	2.4 Mr. Poonphiphat Tantanasin	598,600	0.18
	Tantanasin Group have shares totally	24,099,900	7.07
3	UOB KAY HIAN PRIVATE LIMITED	23,386,300	6.86
4	Mr.Piriya Tanerananonth	20,000,000	5.86
5	LOXLEY PUBLIC COMPANY LIMITED	17,019,702	4.99
6	Verwaltungs-und Privat-Bank Aktiengesellschaft	13,457,344	3.95
7	Mr.Wichai Vachirapong	12,974,000	3.80
8	Thai NVDR Co., Ltd.	11,514,952	3.38
9	Mr.Peeranat Tantipoj	9,000,000	2.64
10	Miss Lertluck Ulist	8,505,800	2.49
	Other Shareholders	76,134,559	22.32
	Total	341,092,557	100.00

Dividend Payment Policy

The company has policy for payment of annual dividends at no less than fifty percent of the net profit in separate financial statements after deduction of juristic person income taxes and allocation of reserve funds in compliance with the law. However, the company may consider dividend payments differing from the set policy, depending upon business performance, financial liquidity, economic conditions and necessity to use current capital in order to manage operations and expand the company's business.

Management Infrastructure

1. Management Structure



The organizational structure of the company's Board of Directors consists of 5 series include the Board of Directors, the Executive Committee, the Audit Committee, the Nomination Committee. Compensation and corporate governance Committee and the risk management committee, with the names of members and scope of authority as follows:

1.1 Board of Directors

The company's board of directors consists of the following 11 directors:

First-Last Name	Position
1. Mr. Krirk-Krai Jirapaet	Chairman and Independent Director
2. Mr. Natthaphon Lilawattananun	Independent Director and Chairman of the Audit Committee Director
3. Mr. Phonrat Piathanom	Independent Director and Audit Director
4. Mrs. Wasara Chotithammarat	Independent Director and Audit Director
5. Dr. Kamol Takabut	Independent Director
6. Mr. Suroj Lamsam	Director
7. Mr. Viraphonh Viravong	Director
8. Mr. Preedee Ngamsantikul	Director
9. Mr. Phairoj Boonpun	Director
10. Mr. Poonhiphat Tantanasin	Director
11. Mr. Ruangchai Kritsnakriengkrai	Director

Miss Boonpa Ruddist is the corporate secretary appointed by the 1/2554 meeting of the board of directors on 24 February 2011.

Signatory Directors Authorized to Sign and Obligate the Company

Mr. Poonhiphat Tantanasin has signatory authority with Mr. Ruangchai Kritsnakriengkrai or Dr. Kamol Takabut and affixes the company seal.

Board of Directors Scope of Authority and Duties

1. The board of directors has the authority, duty and responsibility of managing the company according to the company's bylaws, objectives and regulations, including legal resolutions by the meeting of shareholders with integrity and must maintain the company's interests.
2. The board of directors must arrange a general shareholder's meeting within four months from the end of the company's accounting cycle.
3. The board of directors must arrange a meeting of the company's board of directors at least every three months.
4. The board of directors must arrange credible systems for accounting, financial reports and auditing, including efficient and effective systems for internal control, internal auditing and risk management.
5. The board of directors must arrange the company's balance sheets and profit-loss statements at the end of the company's accounting cycle, which must be audited by an auditor and presented to the meeting of shareholders for consideration and approval.
6. The board of directors must set the company's goals, guidelines, policies, business plans and budgets along with monitoring and supervision, so the administration and management of executives concurs with work planning policies and setting budgets with efficiency and effectiveness.

Furthermore, the scope of the board of directors' duties includes direction for the company to comply with laws on securities and securities exchanges, announcements of the Capital Market Supervisory Board, specifications of the Stock Exchange of Thailand such as engaging in connected transactions, acquisitions or sales of significant properties, or laws associated with the company's businesses.

7. The board of directors must consider reviews, audits and approvals of plans by the executives for business expansion, large investment projects, including participation in investments with other business operators proposed by the executives.

8. The board of directors must continually monitor performance for concurrence with plans and budgets.
9. The board of directors must consider designating executive structures with authority to appoint the Executive Board of Directors, Managing Directors and other sub-committees as deemed fitting, such as the Audit Committee, the Recruitment Committee, the Remuneration Committee, etc., including the setting of the scopes of authority and duties of the Executive Board of Directors, Managing Directors and various appointed sub-committees.

Authorizations according to designated scopes of authority and duty with no characteristics of allowing the aforementioned Executive Board of Directors, Managing Directors and various sub-committees to be able to consider and approve transactions with potential conflicts of interest or conflicts of any other interests with the company or its subsidiaries (if any), except for approval of transactions in line with policies and criteria considered and approved by the board of directors.

10. The board of directors may authorize a director, several directors, or any other persons to perform any actions on behalf of the board of directors under the control of the board of directors, or the board of directors may authorize the aforementioned persons to have authority as deemed necessary by the board of directors within the period of time the board of directors deems fitting. The board of directors may cancel, withdraw, change or revise authorizations as deemed necessary.

Authorizations must not have characteristics of allowing the aforementioned persons to consider and approve of transactions in which they or other persons with potential conflicts of interests as stakeholders or other potential conflicts of interest with the company or its subsidiaries (if any), except for approval of routine business transaction according to normal trade conditions or according to policies and criteria considered and approved by the board of directors under criteria, conditions and designated methods concerned with connected/related transactions and acquisition or distribution transaction of key properties of registered companies according to announcements by the Capital Market Supervisory Board and/or the Stock Exchange of Thailand and/or any other announcements by related agencies.

1.2 Executive Board of Directors

The company's Executive Board of Directors comprises the following Four directors:

First-Last Name	Position
1. Mr.Poonphiphat Tantanasin	Chief Executive Officer
2. Mr. Ruangchai Kritsnakriengkrai	Executive Director
3. Mr. Kitti Achariyaboonyong	Executive Director
4. Miss Boonpa Ruddist	Executive Director

Miss Boonpa Ruddist is the secretary of the Executive Board of Directors appointed by the 1/2554 meeting of the board of directors on 24 February 2011.

Scope of Authority and Duties of the Executive Board of Directors

1. Proposal of goals, policies, business plans, including the company's business strategies and annual budgets for consideration of approval by the company's board of directors.
2. The executive board of directors must supervise compliance of the company's businesses with policies, work plans and budgets approved by the company's board of directors.
3. Consideration of approval of the company's regular business transactions, such as investments to purchase machinery and other properties in line with investments or budgets approved by the company's board of directors, purchases of raw materials into warehouses, sales of goods, etc. The balances for each transaction must be made under authority with the approval of the company's board of directors.
4. Establish corporate structure, authority to administrate the corporation and consider adjusting the salaries and bonuses of employees at levels lower than departmental managers, including consideration of approval of labor rates not included in annual budgets.
5. The executive board of directors has the authority to appoint or employ consultants associated with corporate administration for maximum efficiency.

6. The executive board of directors must consider the company's profits and losses and propose interim dividend payments or annual dividends for approval from the company's board of directors.
7. The executive board of directors has the authority to authorize any person or persons to operate under the control of the executive board of directors or authorize the aforementioned person or persons to have authority as deemed fitting by the executive board of directors within a period of time deemed fitting by the executive board of directors. The executive board of directors may cancel, withdraw, change, or revise authorized persons or authorizations as deemed necessary.
8. Perform other duties assigned by the company's board of directors.

Authorizations of authority, duties and responsibilities by the executive board of directors must not be characteristic of authorizations or temporary authorizations enabling the person or persons authorized by the executive board of directors to approve of transactions in which that person or other persons have potential conflicts of interest (according to the definitions set forth in the announcements of the Capital Market Supervisory Board and/or the Stock Exchange of Thailand and/or related agencies) as stakeholders or with any other conflicts of interest with the company or its subsidiaries and/or related companies. The executive board of directors does not have the authority to approve of actions regarding the aforementioned issues. The aforementioned issues must be presented to the meeting of the board of directors and/or the meeting of shareholders (depending upon the case) for approval, except for approval of transactions under normal business and trade conditions according to the announcements of the Capital Market Supervisory Board and/or the Stock Exchange of Thailand and/or related agencies.

1.3 Board of Audit

The entire Board of Audit is composed of three independent directors who possess knowledge, ability, experience and qualifications in line with the SET's regulations. The Board is composed of non-executive directors with office terms of three years each.

First-Last Name	Position
1. Mr. Natthaphon Lilawattananun*	Chairman of the Board of Audit
2. Mr. Phonrat Piathanom	Audit Director
3. Mrs. Wasara Chotithammarat*	Audit Director

Remarks: * A director with sufficient knowledge and experience for reviewing the credibility financial statements.

Miss Boonnee Kusolsopit is the Internal Auditor and Secretary of the Board of Audit.

Scope of Duties and Responsibilities for the Board of Audit

1. To review the accuracy and sufficiency of the company's financial reports.
2. To review the suitability and effectiveness of the company's internal control systems and internal audits, and to consider the independency of the internal audit agency, and to approve consideration of the appointment, transfer, termination of the head of internal audit or any other agencies responsible for internal audits.
3. To audit the company's compliance with the laws governing securities and exchange markets, the specifications set forth by the Stock Exchange of Thailand and the laws related to the company business.
4. To consider, select and propose the appointment of independent individuals in order to serve as the company's auditors, to propose remuneration for the aforementioned persons, and to attend meetings with the auditors without the management at least once a year.
5. To consider related transactions or transactions with potential conflicts of interest for compliance with the laws and regulations of the stock market in order to ensure that the aforementioned transactions are reasonable and in the company's optimal interests.
6. To prepare Board of Audit reports for dissemination in the company's annual report. The aforementioned reports must be signed by the chairman of the Board of Audit and must contain the following minimum information:
 - (a) Opinions on the accuracy, completeness and credibility of the company's financial report.
 - (b) Opinions on sufficiency of the company's internal control system.
 - (c) Opinions on legal compliance on securities and exchange, and securities market regulations or laws related to the company's business.

- (d) Opinions on auditor's suitability.
 - (e) Opinion on potential conflict of interest transactions.
 - (f) Number of Board of Audit's meetings and meeting attendance by each audit director.
 - (g) Overall opinion or observation rendered by Board of Audit receives on execution of duty in line with charter.
 - (h) Other transactions that should be known by shareholders and general investors with the scope of the duties and responsibilities set forth by the board of directors.
7. To consider and approve the regulations of the company. The Internal Audit Committee prior to submission for approval.
 8. Approved the audit plan, budget and staffing of the internal audit department.
 9. To consider and review the independence and reporting practices of the internal audit section.
 10. To consider and approve the appointment, transfer or dismissal and evaluating the performance of internal audit manager.
 11. To review the code of conduct before the presentation to the Board of Committee.
 12. To review with management team to ensure that employees abide by the Code of Conduct
 13. To review with management regarding the preparation of reports and analysis of the management. (Management's Discussion and Analysis, or MD & A) and disclosed in the annual report.
 14. To review with management regarding financial management and Financial Risk's Management.
 - 15 To supervise the inspection and investigation about necessary perform and responsibilities of company to success
 - 16 To Review Committee duties at least once a year,
 - 17 To perform any other duties assigned by the Board of Directors and also be approved by the Audit Committee as well.
 - 18 To consider reporting on conflicts of interest of directors and management 4, the first since President at least once a year.

1.4 Nomination, Remuneration and Corporate Governance Committee

First-Last Name	Position
1. Mr. Phonrat Piathanom	Chairman of the Nomination, Remuneration and Corporate Governance Committee.
2. Dr. Kamol Takabut	Director
3. Mr. Poonphiphat Tantanasin	Director

Miss Boonpa Ruddist serves as the Secretary of the Nomination, Remuneration and Corporate Governance Committee.

The Nomination, Remuneration and Corporate Governance Committee serves for three years per term.

Scope, Authority, Duties and Responsibilities of the Nomination, Remuneration and Corporate Governance Committee

Designates criteria and policy for recruiting company directors, sub-directors and high-ranking executives by considering the suitability of numbers, structures and composition of the Board of Directors along with designating director qualifications for presentation to the company's Board of Directors and/or the general meeting of shareholders to request approval, depending on the case.

Executive Recruitment and Appointment

1. Sets criteria and policy for recruiting company directors, sub-directors and high-ranking executives by considering the suitability of numbers, structures and composition of the Board of Directors along with setting director qualifications for presentation to the company's Board of Directors.
2. Considers recruitment, selection and currently qualified persons to the positions of directors whose terms are complete and/or in cases of vacant positions and/or additional appointments.
3. Considers and screens persons qualified for becoming Managing Directors to fill vacant positions, including the specification of succession plans for high-ranking executives.
4. Any other operations involved with recruitment according to assignments by the company's Board of Directors.
5. Assesses the performance of the Chief Executive Officer (CEO) for presentation to the meeting of the company's Board of Directors for consideration of approval.

Remuneration

1. Sets policies and criteria for paying remuneration to the company's Board of Directors, the Audit Committee, the Executive Committee and high-ranking executives by presenting to the company's Board of Directors.

2. Specifies necessary and appropriate amounts of annual monetary and non-monetary remuneration for the company's Board of Directors, the Audit Committee, the Recruitment, Remuneration and Good Governance Committee and the Executive Committee by considering amounts commensurate with duties, responsibilities, performance, comparisons with other companies in similar businesses and benefits expected from directors to present to the company's Board of Directors for consideration and present to the meeting of shareholders in order to request approval, depending on the case.
3. Considers the review of policies and criteria in setting remuneration and remuneration payment systems as deemed commensurate with duties and responsibilities in addition to reviewing concurrence with the company's performance and market conditions by primarily considering future benefits for the company.
4. Reports on policies and principles/reasons for remuneration set for directors and executives according to the specifications of the Stock Exchange of Thailand by disclosing in the annual information disclosure form (56-1) and the company's annual report (56-2).
5. Sets annual bonus and salary raise rates based on the company's performance.
6. Considers filtering the company's salary structures and other benefits and returns.
7. Performs any other relevant actions as assigned by the company's Board of Directors. The Administrative Department and various agencies are required to report or present information and relevant documents to the Recruitment, Remuneration and Good Governance Committee to support the Recruitment, Remuneration and Good Governance Committee in successfully operating according to assigned duties.

Corporate Governance

1. Considers reviews and presentations for the company's Board of Directors to approve of policies concerning good governance, business ethics, corporate social and environmental responsibility with sustainable development of the company and any other policies or practice guidelines promoting the company's sustainable growth.
2. Ensures that the Administrative Department implements various policies/practice guidelines in 1 for ongoing company development. The aforementioned policies and guidelines must be in line with and appropriate for the company's business, recommendations of associated agencies and comparable to international standards.
3. Follow-up and review various work systems in the organization for concurrence with good ethics and practice guidelines according to outlined policies and practice guidelines.
4. Supervise the company's operations according to good governance principles of agencies with regulatory authority in compliance with the law such as the Office of the Securities and Exchange Commission and the Stock Exchange of Thailand, etc.
5. Report the organization's performance in line with corporate governance policies and other related policies to report to the company's Board of Directors and external organizations as appropriate.

1.5 The Board of Risk Management

First-Last Name	Position
1. Mr. Ruangchai Krissanakriangkrai	Director
2. Miss Boonpa Ruddist	Director
3. Mr. Kittit Achariyaboonyong	Director
4. Mr. Charoensak Sarawong	Director
5. Miss Kobpetch Chuphemporn	Director
6. Miss Suanya Noochapun	Director
7. Mr. Nipat Chingchamikom	Director
8. Miss Sasikarn Tantanasin	Director
9. Mr. Somporn Pragobmai	Director
10. Mr. Phot Wongkham	Director
11. Mr. Ittiphol Kasikram	Director
12. Mr. Chanchai Thanawan	Director
13. Miss Sureeporn Mitthammana	Director & Secretary

Scope and Responsibilities of the Board of Risk Management

1. To set overall risk management policy and guidelines covering various types of important risks such as financial risks, exchange rate risks, marketing risks and other risks potentially affecting the company's operations and reputation for presentation to the board of directors for approval.
2. To perform assessment and analysis on potential risk factors including the setting of risk measuring criteria and acceptable risk ceiling.
3. To establish processes for managing, assessing, controlling and monitoring risks; to develop processes in to achieve optimum efficiency and suitability in managing all types of potential risks.
4. To regularly report to the board of directors on the management, operations and corporate risk status and changes as well as areas for improvement or correction and notify the Board of Audit to review the sufficiency and suitability of risk management.
5. Manages and controls overall corporate risk management for concurrence with good governance principles.
6. Reviews the sufficiency of policy and risk management systems as well as effectiveness of the system and compliance with set policy.
7. Arranges for a risk management team as necessary.
8. Executes duties as assigned by the board of directors.
9. The board of risk management holds meetings at least once every three months, and reports to the Board of Audit and the board of directors for awareness every quarter.

QTC recognize the importance of good corporate management in driving the organization toward stable growth and business expansion, steady financial status and earning apposite dividends for shareholders. Thus, the company has deemed it fitting to employ risk management practices with operational frameworks and risk management processes compliant with the standards of the Committee on Sponsoring Organizations of the Tread way Commission (COSO), which is an international standard, in order ensure that the people involved have understanding and proper application of risk management principles.

The Risk Management Committee specified the following corporate risk management policies:

1. Risk management is the responsibility of employees at all levels who are required to take into consideration the operational risks existing in their respective agencies and organization as well as prioritize risk management on appropriate and proper levels.
2. All departments are to be responsible for risk assessment; determining risk indicators, preventive guidelines and mitigation or prevention mitigation of potential risks, including regular monitoring and evaluation of risk management. Furthermore, all departments are required to make risk reports according to the operational framework and procedures for risk management.
3. Risk management procedures must be secondary to the decision-making, strategy planning, work plans and operations of the company.
4. When employees witness or become aware of risks with potential Impact on the company, the employee is required to immediately report the aforementioned risks to the persons involved for further risk mitigation.
5. Constantly promote and provide knowledge and understanding about risk management procedures and guidelines for executives and employees in order to emphasize the importance of awareness and participating in the organization's risk management as part of a culture leading to value creation.

1.6 Executives

The company has a total of 14 executives as follows:

First-Last Name		Position
1.	Mr. Poonphiphat Tantanasin	Chief Executive Officer
2.	Mr. Ruangchai Krissanakriangkrai	Managing Director
3.	Miss Boonpa Ruddist	Deputy Managing Director(General Management)
4.	Mr. Kittti Achariyaboonyong	Deputy Managing Director (Marketing)
5.	Mr. Charoensak Sarawong	Deputy Managing Director (Factory)
6.	Miss Kobpetch Chuphemporn	Manager, Finance & Accounting
7.	Miss Suanya Noochapun	Manager, Domestic Sales Department
8.	Mr.Phot Wongkham	Manager, International Sales Department
9.	Miss Sureeporn Mitthammana	Manager, Sustainable Development Department
10.	Mr. Nipat Chingchamikorn	Manager, Special Project Sale Customer and Service Department
11.	Miss Sasikarn Tantanasin	Manager, Business Development Department
12.	Mr. Somporn Pragobmai	Manager, Engineering Department
13.	Mr. Ittiphol Kasikram	Manager, Supply Chain & Logistic Department
14.	Mr.Chanchai Thanawan	Manager, Production Department

Scope of Authority and Duties of the Managing Director

1. Supervise business operations and/or administrate the company's daily work.
2. Carry out or administrate work in line with policies, work plans and budgets approved by the board of directors and/or the executive board of directors.
3. Set the company's policies, business plans, business strategies and annual budgets for presentation to the executive board of directors and request approval from the company's board of directors.
4. Consider approval of the company's regular business transactions, such as investments to purchase machinery and other assets in line with investment budgets or budgets approved by the company's board of directors, purchases of raw materials into warehouses and distribution of products, etc. The balance for each item must be approved by the authority of the company's board of directors.
5. The Managing Director has the authority to approve rates for labor, employment and filling employee positions, appointment and transfers of employees at levels lower than departmental managers as approved by the company's board of directors, including the consideration of duties and responsibilities of each unit and position.
6. Continually monitor and evaluate the company's performance. The Managing Director also has the duty of reporting on performance and management, including work progress, to the Executive Board of Directors, the Audit Committee and the company's board of directors.
7. Consider approval of entry into agreements regarding the company's regular business. The balance for each transaction must be in line with authorization already approved by the company's board of directors.
8. Issue orders, regulations, announcement sand various records for the company's performance in line with policies in the interests of the company, including the maintenance of discipline in the corporation.
9. The Managing Director has the authority to appoint committees or various working groups for benefits, efficiency and transparency in management. The Managing Director has the authority to authorize any person or persons to operate under the control of the Managing Director and the Managing director may authorize the aforementioned person or persons to have authority as deemed fitting by the Managing Director. The Managing Director may cancel, terminate, change, or amend persons who have been granted authority, or the granting of said authority, as the Managing Director deems it fitting to do so.
10. Perform other duties as assigned by the executive board of directors or the board of directors.

On any issues where the Managing Director, persons authorized by the Managing Director, or persons with potential conflicts of interest (according to the definitions set forth in the announcements of the Capital Market Supervisory Board and/or the Stock Exchange of Thailand and/or related agencies) as stakeholders or other conflicts of interest with the company and/or its subsidiaries and/or affiliated companies, the Managing Director has no authority to approve of the aforementioned issues. The aforementioned issues must be presented to the meeting of the company's board of directors and/or the meeting of shareholders

(depending upon the case) in order to request approval, except for approvals of transactions in accordance with the company's regular business and trade conditions as set forth in the announcements of the Capital Market Supervisory Board and/or the Stock Exchange of Thailand and/or related agencies.

The Chairman of the Board is under obligation to perform the following:

1. Serve as Chairman at meetings of the company's Board of Directors.
2. Call the meeting of the company's Board of Directors.
3. Cast the deciding vote in cases where the meeting of the company's Board of Directors has voted and found the vote to be tied.
4. Serve as the Chairman at shareholders' meetings.

Setting Authority to Approve of Financial Amounts

The company has set authority for the approval of financial amounts for the company's regular business transactions, which can be summarized as follows:

		Department Managers	Deputy Managing Director	Managing Director	Executive Board of Directors	Board of Directors
(1)	Investments from investment budgets (per project).	-	No more than 2 million baht	No more than 3 million baht	No more than 20 million baht	more than 20 million baht
(2)	Investments outside of budget plans.	-	-	-	No more than 5 million baht	more than 5 million baht
(3)	Expenses associated with assets: - Purchases of machinery according to investment budgets. - Purchases of other assets.	- -	No more than 2 million baht No more than 2 million baht	No more than 3 million baht No more than 3 million baht	No more than 24 million baht No more than 24 million baht	more than 24 million baht more than 24 million baht
(4)	Sale of products by setting prices according to price policies (Price List).	No more than 5 million baht	No more than 5 million baht	No more than 100 million baht	No more than 200million baht	More than 200million baht
(5)	Sale of products by setting prices lower than price policies (Price List) ¹ .	No more than 10%	No more than 15%	No more than 15%	> 15%	
(6)	Requests to purchase raw materials into warehouses for production ² .	No more than 1 million baht	No more than 5 million baht	No more than 10 million baht	> 10 million baht	
(7)	Requests to purchase machinery/instruments/buildings and facilities ³ .	No more than 200,000 baht	No more than 2 million baht	No more than 3 million baht	> 3 million baht	

Remarks:

1. Considerations for approval of product sales at prices lower than price lists must also include consideration of sales values apart from proceeding as authorized in (5) by requesting approval from authorized persons in line with the sales values set forth in (4).
2. The company has considered granting the executive board of directors the authority to approve of requests to purchase raw materials for production into warehouses without financial limitations, because the main raw materials which need to be ordered, e.g. silicon and copper foil, are raw materials with few producers and sales prices referenced to prices on the global market which is constantly changing. Therefore, considerations of each purchase order will be made in terms of need for raw materials, including trends in the fluctuating prices of main raw materials, which rely on flexibility and speed in the process. In practice, however, the company reports the aforementioned issue to the company's board of directors in board of directors meetings.
3. Investments to purchase machinery must concur with investment structures approved by the company's board of directors. In terms of procedures, the party to purchase the assets must request approval to purchase assets as authorized in (3). The authority in (7) involves signing for approval of purchase requests.

2. Self – Evaluation of the Board of Directors

The board of directors requires the evaluation on the operation of the board of directors annually at least 1 time per year to perceive problems and threats during the last year and improve the efficiency of operation of Board of Directors because they can perceive their responsibilities and duties explicitly. In addition to improve the relationship between Board of Directors and Management Team as well as improve direction of problem solving to meet with good corporate governance. Assessment criteria has the following details: Performance, policies, correctional guidelines in cases where operations did not occur according to specifications, preparations before attending meetings, practices concerning the governance of the company's business, performance of duties as the Chairman and risk management monitoring, etc. The results of the assessment, the Commission analyzed statistical data. And the outcome of the evaluation of the Company's Board of Directors in order to contribute to the implementation of the next administration. And in 2016, the Company assessed the performance of every sub-committee, namely, the Audit Committee, the Recruitment, Remuneration and Corporate Governance Committee and the Risk Management Committee with the following assessment criteria: 1. Suitable sub-committee structure and qualifications resulting in effective work; 2. Effective sub-committee meeting performance and 3. Roles, duties and responsibilities of sub-committees. In 2019, Every committee has reviewed the excellent level

Chief Executive Offer' Performance Evaluation

The company's board of directors has scheduled annual evaluations of the performance of directors. The company adapted its evaluation form based on a sample self-evaluation form for directors of the Stock Exchange of Thailand as deemed fitting and concurrent with the organization's goals and strategic plans. The assessment criteria are divided into the following topics: 1. Leadership; 2. Setting Strategy; 3. Strategy Performance; 4. Planning and Financial Performance; 5. Relationship with the Board of Directors; 6. External Relationships; 7. Management and Personnel Relationships; 8. Handing Over Positions; 9. Product and Service Knowledge; 10. Personal Qualities. The scores of the board of directors' self-evaluation were submitted to statistical data analysis for the purpose of improvement and development of various and different aspects as well as the consideration of setting remuneration rates and commensurate incentives. In the year 2019, there performance is excellent.

3. Board of Directors Structure and Components

The company's board of directors allocated for a suitable number of directors based on its business size. At present, there are eleven directors; two are executive directors and nine are non-executive directors. All five non-executive directors are independent directors. All independent directors are independent from Management and major shareholders of the company.

Independent directors account to 45.45 percent of the entire board of directors.

1. Mr. Krirk-Krai Jirapaet
2. Mr. Natthaphon Lilawatthanun
3. Mr. Phonrat Piathanom
4. Dr. Kamol Takabut
5. Mrs. Wasara Chotithammarat

The definition of its independent directors

The company has determined the definition of its independent directors as the director who is non-executive director and do not involve in the management permanently, and is not the company's major shareholder. The company has specified requirements equal to the minimum requirements set by the SEC and the SET. Nominated independent directors of the company are fully qualified according to the definitions as below:

- (1) Holding share of no more than 1 percent of the total voting shares of the company, parent company, subsidiary company, related company or juristic person of person who might have conflict of interest by including the shares held by the related persons
- (2) Not a director or used to be a director who has a managing role, an employee, officer or consultant who receives the salary or authorized person of the company who has the influence on parent company, subsidiary company, related company, subsidiary company at the same level or juristic person who might have a conflict of interest unless such person has been released from such status not less than 2 years before the application is submitted to Securities and Exchange Commission Thailand

- (3) Not a person who is related by blood or by legal registration as father, mother, spouse, siblings and child including the spouse of the child of the managing executive, major shareholders, authorized controlling persons or those nominated to be managing executives or authorized controlling persons of the company or subsidiary company
- (4) Does not have or used to have the business relationship with the company, parent company, subsidiary company, related company or juristic person who might have the conflict of interest in the way that might obstruct independent decision making. The person is not or used to be a major shareholder, director who is not an independent director, or managing executive of those who have business relationship with the company, parent company, subsidiary company, related company or juristic person who might have a conflict of interest unless such person has been released from such status not less than 2 years before the application is submitted to Securities and Exchange Commission Thailand
- (5) Is not or used to be the auditor of the company, subsidiary company, related company, or juristic person who might have a conflict of interest and not a major shareholders, director who is not an independent director, managing executive or audit partner of the company, parent company, subsidiary company, related company or juristic person who might have conflict of interest unless such person has been released from the status not less than 2 years before the application is submitted to Securities and Exchange Commission Thailand
- (6) Is not or used to be professional service provider including legal consultant or financial consultant who receives the service fee more than 2 million baht per year from the company, parent company, subsidiary, related company or juristic person who might have a conflict of interest. In the case where the professional is a juristic person, this shall include major shareholders, director who are not an independent director, managing executive or managing executive partner of the service providing entity unless such person is no longer in the status for at least 2 years before the application is submitted to Securities and Exchange Commission Thailand
- (7) Is not the appointed director who represents the directors of the company, major shareholders or the shareholders who are related to the major shareholders
- (8) Does not possess any characters that prevent giving an independent opinion on the operation of the business
- (9) Do not engage in the same business and competing with the company or its affiliates. Do not hold significant portion of shares in the limited partnership, or be a management director, employee, officer, consultant who earned permanent salary, or hold more than half of voting shares in other companies that engage in the same business and competing significantly with the company or its affiliates.
- (10) Each independent director shall be able to hold this position continuously but not over than consecutive 9 years.

The Board of Directors does not have independent directors holding positions as directors in more than five registered companies and none of the directors or high-ranking executives are employees or partners in outside auditing companies whose services were commissioned by the Company during the past two years.

4 Appointment of Directors and High-Ranking Executives

The company's plan is to appoint directors and high-ranking executives appropriately and transparently to ensure that the company has directors and high-ranking executives who are professionals capable of independent management from major shareholders or other shareholders. The Recruitment Committee determines remunerations and corporate governance, and is responsible for appointing suitable people into selection according to specified selection methods, the criteria and selection method of which is dependent upon the propriety of the company's situation during which time.

5 Director and Executive Development

- 5.1 The company's board of directors has policy for promoting and facilitating training and education the people involved in directing and managing the company's business, which includes the company's directors, auditing directors, executives and secretaries to ensure that operations are constantly improving, which includes organizations such as the Thai Institute of Directors Association (IOD).
- 5.2 The company has prepared documents and information beneficial to the performance of new directors to accompany business study manuals and practice guidelines of the company to new directors.
- 5.3 The company has plans to ensure that selection of people who undertake responsibilities in any important executive position is fitting and transparent for the purpose of ensuring that the company has professional executives capable of independent management from major shareholders or other shareholders. The company's board of directors makes considerations and reviews the aforementioned plans annually. Executives appointed to succeed the aforementioned positions will be provided with an individual development plan to prepare them for future promotions.

6 Board of Directors Meetings

As a means of supporting and promote the company, the board of directors is attend every company board of directors' meeting, for which the company scheduled meetings in advanced every year in order to notify the board of directors in each meeting by setting at every Thursday of second week of each quarter. Clear meeting agendas are set whether they are memoranda or agendas for consideration. Documents completely accompany meetings in sufficient numbers of decision-making and are delivered to the board of directors at least seven days in advance in order to ensure that every member of the board of directors has the ability to discuss and express opinions transparently. The chairman of the board will evaluate comments and summaries obtained from the meeting. Meeting reports are created by the company's secretaries, and after approved by the meeting, are stored in document cabinets on the second floor of the company's main office in Bangkok, where documents can be verified and audited by directors and other people involved. Finally, the company has set policy concerning the quorum for meetings of the board of directors in which at least half of the all directors must be present in order to form a meeting quorum and Directors and related parties are auditable. The Company has set policy on the quorum of a meeting of the Board of Directors requiring no less than half of all directors in attendance to have a meeting quorum. Moreover, the minimum quorum when the Board of Directors passes meeting resolutions must be no less than two-thirds of the directors.

The attendance details of each director for 2019 are summarized as follows:

First-Last Name	Position	Meeting Attendance/All Meetings (Times)		
		Company Director	Auditing Director	Nomination Director
1. Mr. Krirk-Krai Jirapaet	Chairman of the Board	9/9	-	-
2. Mr. Natthaphon Lilawatthanun	Chairman of the Board Auditing Committee/ Director	9/9	5/5	-
3. Mr. Phonrat Piathanom	Chairman of the Nomination, Remuneration and Corporate Governance Committee / Auditing Director/ Director	7/9	5/5	4/4
4. Mrs. Wasara Chotithammarat	Director/ Auditing Director	7/7	4/4	-
5. Dr. Kamol Takabut	Director/ the Nomination, Remuneration and Corporate Governance Director	6/7	-	3/3
6. Mr. Suroj Lamsam	Director	1/9	-	-
7. Mr. Viraphonh Viravong	Director	6/9	-	-
8. Mr. Preedee Ngamsantikul*	Director	4/4	-	-
9. Mr. Phairoj Boonpun*	Ditector	4/4	-	-
10. Mr. Poonphiphat Tantanasin	Director/ the Nomination, Remuneration and Corporate Governance Director	8/8	-	4/4
11. Mr. Ruangchai Kritsnakriengkrai	Director	8/8	-	-

Remarks: * Mr. Preedee Ngamsantikul and Mr. Phairoj Boonpan are appointed the director by shareholder meeting on 7 June 2019

7 Term of Office

The company's board of directors is composed of skilled and knowledgeable people. The company has made arrangements as compatible with the size of its business. At present, the company has a total of eleven directors; two are executive directors , four are non-executive and five are independent directors for a number over 45.45 percent of the entire board of directors. The descriptions of the positions held by individual directors are as follows:

First-Last Name	Year of Appointment	Most Recent Date of Selection	Type of Director	Recruited/ Appointed to Directorship in 2019	Next Appointment
1. Mr. Krirk-Krai Jirapaet	2016	2018	Independent Director	No	2021
2. Mr. Natthaphon Lilawatthanun	2011	2018	Independent Director	No	2021
3. Mr. Phonrat Piathanom	2011	2017	Independent Director	No	2020
4. Dr. Kamol Takabut	2016	2019	Independent Director	Yes	2022
5. Mrs. Wasara Chotithammarat	2016	2019	Independent Director	Yes	2022
6. Mr. Suroj Lamsam	2017	2017	Director	No	2020
7. Mr. Viraphonh Viravong	2018	2018	Director	No	2021
8. Mr. Preedee Ngamsantikul*	2019	2019	Director	Yes	2022
9. Mr. Phairoj Boonpun*	2019	2019	Director	Yes	2022
10. Mr. Poonhiphat Tantanasin	2011	2019	Executive Director	Yes	2021
11. Mr. Ruangchai Kritsnakriengkrai	2016	2018	Executive Director	No	2020

Remarks: All five independent directors hold the position of independent director beginning from the year of appointment for a term of eight years.

The procedures for nominating directors to fill vacant positions from directors vacating office according to term as follows:

1. The company gives opportunities for shareholders to nominate persons for appointment as company directors through the company's website in line with the specifications of the SEC and the Stock Exchange of Thailand.
2. Inquiries are made into the willingness of independent directors vacating position according to term and the intentions of major shareholders are asked in order to nominate directors to replace directors vacating office according to term.
3. The Nomination, Remuneration and Corporate Government Committee makes screening considerations before making proposals to the Board of Directors for consideration to further propose to a meeting of shareholders to consider appointing directors based on qualifications of directors as specified by relevant laws, company regulations and the charter of the Board of Directors.

8. Corporate Secretary

As a means of building knowledge about the work of the corporate secretary and to enable efficient performance of the corporate secretary's duties, the company has stipulated that the corporate secretary be required to pass various training courses such as basic legal courses and courses on criteria associated with listed companies, courses for corporate secretaries and attendance at various seminars held by the Stock Exchange of Thailand and the Thai Institute of Directors (IOD).

In Board of Directors Meeting No. 1/2554 on 24 February 2011, the company's board of directors passed a resolution for the appointment of Boonpa Ruddist, a person possessing knowledge and ability who has passed training courses in relation to the performance of the duties of company secretaries, to serve as the Corporate Secretary in compliance with Section 89/15 of the Securities and Exchange Act of B.E. 2535 (1992), revised with the Securities Exchange Commission Act (No.4) of B.E. 2551 (2008). The duties and responsibilities of the Corporate Secretary are as follows:

1. Serves as a center for storing various important documents/certificates.
2. Registers directors and reports direct and executive stakeholders.
3. Makes arrangements for meetings of the board of directors and shareholders, meeting invitations and minutes to the meetings.
4. Reports on resolutions and policies passed by the board of directors and shareholders' meetings to related executives and follows up on the aforementioned resolutions and policies through the chief executive officer.
5. Observes and makes arrangements for the disclosure of information and information technology reports on the areas under his/her responsibility to agencies; directs and supervises in compliance with the law, regulations and policies concerning the company's disclosure of news and information.

6. Contacts and communications with ordinary shareholders to inform them of various shareholders' rights/privileges and company news.
7. Delivers news and information to directors on topics concerning the company's business operations in order to accompany the performance of directors' duties.
8. Makes arrangements for the provision of advice for newly appointed directors.
9. Other matters as assigned by the company's board of directors.

Brief Background of Corporate Secretary

Mrs. Boonpa Ruddist

Education: Bachelor of Business Administration, Kasem Bundit University

Training Courses: Company Secretary Program (CSP), Class No. 29/2009

Effective Minute Taking (EMT), Class No.13/2009

Board Reporting Program (BRP), Class No. 2/2010

Company Reporting Program (CRP), Class No. 1/2011

Qualifications: Ability to coordinate tasks, summarize topics and arrange minutes to meetings; competent work performance, creative thinking, good skill in interpersonal relationships, leadership capacity, communications techniques and strategic planning.

9. Remuneration for Directors and Executives

9.1 Monetary Remuneration

Remuneration for the Board of Directors

At the shareholders Extraordinary General Meeting in 2019 which was held on 7 June 2019 , a resolution was passed on the setting of director remuneration for 2019 in the form of meeting fee, monthly fee approved by shareholding meeting and separate not over 6,000,000 baht for bonus which the company paid as follows:

(Unit: Baht)

Name	Position	Meeting Fee			Monthly Fee	Yearly Fee	Total
		Company Director	Audit Director	Nomination, Remuneration and Corporate Governance Director			
1. Mr. Krirk-Krai Jirapaet	Chairman of the Board	160,000	-	-	300,000	1,333,000	1,793,000
2. Mr. Natthaphon Lilawattananan	Chairman of the Board Auditing Committee/ Director	120,000	75,000	-	240,000	666,600	1,101,600
3. Mr. Phonrat Piathanom	Chairman of the Nomination, Remuneration and Corporate Governance Committee / Auditing Director/ Director	90,000	50,000	30,000	240,000	666,600	1,076,600
4. Mrs. Wasara Chotithammarat	Director/ Auditing Director	90,000	40,000	-	220,000	611,500	961,500
5. Dr. Kamol Takabut	Director/ the Nomination, Remuneration and Corporate Governance Director	90,000	-	20,000	220,000	611,500	941,500
6. Mr. Suroj Lamsam	Director	15,000	-	-	240,000	666,600	936,000
7. Mr. Viraphonh Viravong*	Director	90,000	-	-	240,000	666,600	996,600

Name	Position	Meeting Fee			Monthly Fee	Yearly Fee	Total
		Company Director	Audit Director	Nomination, Remuneration and Corporate Governance Director			
8. Mr. Preedee Ngamsantikul	Director	60,000	-	-	140,000	388,800	588,800
9. Mr. Phairoj Boonpun	Director	60,000	-	-	140,000	388,800	588,800
10. Mr.Poonphiphat Tantanasin	Director/ the Nomination, Remuneration and Corporate Governance Director	120,000	-	20,000	-	-	140,000
11. Mr.Ruangchai Kritsnakriengkrai	Director	120,000	-	-	-	-	120,000
Total		1,015,000	165,000	70,000	1,980,000	6,000,000	9,230,000

Remarks: * Mr. Preedee Ngamsantikul and Mr. Phairoj Boonpan are appointed the director by shareholder meeting on 7 June 2019

No other form of remuneration.

9.2 Executive Remuneration

In 2018 and 2019, the company paid remuneration to executives amounting to 23.75 million baht and 31.34 million baht. The aforementioned remuneration includes salaries, bonuses and providence fund contributions.

The only other form of remuneration would be a company car.

10. Supervision of Subsidiaries' and Affiliates' Operations

At present, the company has one subsidiaries and one joint company as follows:

1. QTC Global Power Co., Ltd. (subsidiaries Company) produces electricity and other energy, the establishment on 28 September 2016 capital 560 million
2. PPWE Co., Ltd. (associated company) produces energy, the establishment on 12 January 2016 capital 1 million.

The Company governs subsidiaries and/or associates based on good governance guidelines. The Company appointed the Chairman of the Executive Committee and the Managing Director as the Chief Executive Officer and a director of the subsidiary to set business guidelines, goals and good governance guidelines consistent with the mother company.

11. Securities Trading Policy and Using the Company's Inside Information and Trade Secrets

1. The company strictly forbids its directors, executives, employees and staff, including the spouses and under-age children of the aforementioned, from trading the company's shares during a period of one month before the financial statements are disclosed to the public.
2. The company forbids its directors, executives, employees and employees, including spouses and under-age children of the aforementioned, from using the company's internal data available or in a way which might affect the company's security price changes which have not yet been disclosed to the public for the purpose of purchasing, selling, purchase/sale proposals or persuading other individuals to purchase, sell, propose to purchase/sell the company's securities, whether directly or indirectly, before the data is disclosed to the public, whether the aforementioned actions are for personal gain or the gain of others, or aimed at having the other persons take the aforementioned actions with the benefit of personal gain/remuneration. Any person found in violation will be subject to penalties according to the disciplinary measures set forth by the company.

3. The company's directors, executives, staff and employees are forbidden from disclosing company secrets and/or internal data to other individuals for personal gain or for the gain of other individuals, whether directly or indirectly, with or without remuneration.
4. The interests and trade secrets of the company or the company's customers must be maintained. Disclosure of company's trade secrets to outside individuals, especially to the company's rivals, even when a director, manager or employee term of office has expired is strictly forbidden.

The company's policy on securities trading, the use of inside information and trade secrets is recorded in the code of conduct which the company has made into a manual book given to all directors, executives and employees, all of whom are required to sign to assure complete compliance. Moreover, compliance with the code of conduct is supervised. The full version of code of conduct can be viewed at www.qtc-energy.com.

12 Personnel

1 Number of Employees

As of 31 December 2019, the company had a total of 251 employees (not including 14 executives) with 242 as regular employees and 9 as daily employees according to the following details:

Department	Regular Staff (persons)	Daily Staff (persons)	Total (persons)
Special Project Sale & Customer Service	22	-	22
Supply Chain and Logistics	25	-	25
International Sales	3	-	3
Domestic Sales	9	-	9
Administration	6	-	6
Business Development	-	-	-
Accounting and Finance	10	-	10
Production	122	9	131
Sustainable Development Department	13	-	13
Engineering	25	-	25
Safety	1	-	1
R&D	2	-	2
Marketing Strategy	2	-	2
Internal Audit	1	-	1
Product management	1	-	1
Total	242	9	251

Remarks: Under the company's organizational structure, the Business Development Department, R&D Section, report directly to the Managing Director / International Sales Department, Domestic Sales Department, Special Project Sale & Customer Service Department, Marketing Strategy Department, report directly to the Deputy Managing Director(Marketing) / Sustainable Development Department, Administration Department, report directly to the Deputy Managing Director(General Management) / Accounting and Finance Department, report directly to the Deputy Managing Director(Accounting and Finance) / Production Department, Engineering Departments, Supply Chain and Logistics Department, report to the Deputy Managing Director(Factory)

2 Labor Disputes

-None-

3 Employee Remuneration

The board of directors has set policies and practice guidelines concerning employee remuneration and benefits Taking into account the results of the operation. Each year, profitability and performance measures based on Balanced Scorecard for which employee compensation is as follows:

Monetary Remuneration

In 2019, the company paid remuneration to its employees (not including executives) amounting to 98.59 million baht in the form of salaries, bonuses, overtime pay, provident fund contributions. The company established a provident fund contributions on 30 July 2008.

Other Remuneration

-None-

The company has created employee handbooks and distributed to all employees in the organization for acknowledgement of rules, regulations and benefits.

4 Personnel Development Policy

It is the company's vision to be a world class transformer manufacturer with a mission to respond to challenges in developing the customers' electrical systems to meet world class quality standards leading to the setting of all personnel development policy so personnel have capability to achieve the organization's mission and vision based on the following key tenets:

- 1 Constructive Engagement: Having employees at all levels participate in setting work policy at differing levels. However, the extent of participation varies and is focused on joint solutions involving development with emphasis on seeking solutions for resolving issues (rather than pinpointing the guilty party) by providing opportunities to hear and respect differing opinions.
- 2 Sharing Success: Build a working atmosphere where everyone participates in corporate success, which will be reflected in the form of remuneration focused more on overall corporate success than individual achievements, and promoting employees to learn from practice by using the knowledge obtained from previous practice to generate replication, improvement and development of knowledge for future practice by encouraging learning exchanges within the corporations and remaining updated on changing business conditions and responding to those changes. Since everyone must achieve together, value must be given to the success of each employee, agency and business unit which will lead to the success of the entire corporation.
- 3 Better Attitude: Having an attitude that everything must "be better than before" in order to promote continual improvement to meet the expectations of customers, society, organizations and shareholders.

13 Auditor Remuneration

The remuneration of the auditors for the year 2019 amount 1,545,000 baht, up from 165,000 baht in 2018 the company did not pay a fee to the auditor. Auditing the Auditor's Office. The parties related to the auditor and the audit firm affiliated auditor. During the fiscal year, the company did not pay a fee and subject. No company directors and executives who are employees or partners of the audit firm

Non-Audit Fees

The company does not have other non-audit fees.

14. Director and Senior Executive Share Holdings

Company Director/ Senior Executive	Position	Characteristics Of Shareholdings	No. of Common Shares As of 30 Dec. 2018	No. of Common Shares As of 30 Dec. 2019	Increase (Decrease) During financial year
Mr. Krirk-Krai Jirapaet*	Chairman	No	0	0	0
Mr. Nattharphon Lilawatthanun	Director	No	0	0	0
Mr. Phonrat Piathanom	Director	Direct	276,500	357,500	81,000
Dr. Kamol Takabut	Director	No	0	0	0
Mrs. Wasara Chotithammarat	Director	No	0	0	0
Mr. Suroj Lamsam	Director	No	0	0	0
Mr. Viraphonh Viravong	Director	No	0	0	0
Mr. Preedee Ngamsaotikul	Director	Direct	2,450,000	2,450,000	0
Mr. Phairoj Boonpun	Director	No	0	0	0
Mr. Poonphiphat Tantanasin	Director /CEO	Direct	598,000	598,000	0
		Indirect(Wife)	602,600	602,600	0
Mr. Ruangchai Kritsnakriengkrai	Managing Director	No	0	0	0
Miss Boonpa Ruddist	Duty Director Managing	No	0	0	0
Mr. Kitti Achariyaboonyong	Duty Director Managing	No	0	0	0
Mr. Jaroensak Sanwong	Duty Director Managing	No	0	0	0



Corporate Governance

The board of directors of the company realizes the importance of good governance since it is an important mechanism that leads to an efficient, transparent and verifiable management system which, in turn, creates trust and confidence in the shareholders, investors, stakeholders and all parties involved. Having good governance will be a value adding tool that helps build the competitiveness and promotes sustainable growth of the company in the long run. The board of directors has, therefore, assigned the Remuneration and Good Governance Committee the task of following up on compliance with policy and human resources development to build good people with sound morals and ethics.

In following up on compliance with corporate governance policies in 2019, the company made arrangements for the company wide promotion and communication of information to directors, executives and employees at all levels by the distribution of letters, good governance and the business code of conduct. The company's board of directors, executives and employees has acted in compliance with good governance policy and the business code of conduct. Moreover, compliance has been regularly monitored and there were no issues or situations involving non-compliance with the abovementioned. By removing the IOD's approach comes as the next Pat guidance.

The aforementioned commitment in 2019 has resulted in the company's evaluation in the annual meeting of shareholders 2019 with a score of 100 points, or a good level according the Quality of Annual General Meeting (AGM) Project, the Thai Investors Association (TIA) Project, which is another means of building sustainable good governance. In addition, the results of the survey of information on Corporate Governance Report of Thai Listed Companies 2019 earned an overall score of 94%, which falls within a Excellent CG Scoring range, which is above average for listed company scores. Nevertheless, the company remains firmly committed to developing the company's good governance policies for sustainability.

The company has reviewed the good corporate governance policy every year. The Committee has considered and reviewed the implementation of the principles comply with CG Code 2017 There are 8 Guidelines that are already applied to business context of the company for relation with the Stock Exchange of Thailand in the 8/2019 meeting of the board of directors on 19 December 2019, which covered five sections of principles detailed as follows:

Section 1: The Rights of Shareholders

The company is aware of and gives importance to the basic rights of shareholders such as rights to purchase, sell, or transfer shares, rights to receive shares in the business, rights to receive sufficient news and information about the business, rights to participate in meetings to exercise rights to vote in shareholders' meetings to appoint or remove directors, appointments of auditors and issues with impact on the company, such as distribution of dividends, specifications or reviews of regulations, memorandums of association, regulations, reductions or increases in capital, etc.

Apart from the above mentioned basic rights, the company has also acted on various issues to promote and facilitate the exercising of shareholders' rights as follows:

- The company sends letters of notification to attend shareholders' meetings to shareholders no less than 13 days before the meeting date for 2019 sending it at 12 April,2019. Letters contain schedules for dates, times, places and agendas of the meetings, including data regarding topics requiring resolutions at the meeting. The information is also posted at the company's website in Thai and English for at least 22 days for 2019 it was posted at 3 April,2019 so shareholders are given a sufficient amount of time to study the information accompanying the meeting before receiving information in the form of documents from the company.
- The company has set agendas for the annual shareholder's meeting for compliance with the principles of corporate good governance as follows:

- Agenda 1 Consideration to approve the minutes to the shareholder's general meeting.
- Agenda 2 Consideration to acknowledge the company's performance for the previous year.
- Agenda 3 Consideration to approve the company's financial budget for the accounting cycle for the year ending 31 December of the previous year.
- Agenda 4 Consideration to approve the allocation of profits from operations for the previous year.
- Agenda 5 Consideration of the nomination of replacement directors for directors whose terms of office have expired.
- Agenda 6 Consideration to approve director's compensation.
- Agenda 7 Consideration of the appointment of auditors and set compensation for the annual audit.
- Agenda 8 Consideration of other matters by giving the shareholders opportunities to inquire about key issues.

- In the event that a shareholder is unable to attend a meeting, the shareholder may authorize an independent director or an individual to attend the meeting on his/her behalf by using any one of the letters of proxy sent by the company with the meeting invitation.
- Shareholders are given opportunities to send questions on meeting agendas to the board of directors no less than 20 days before the meeting date via the company's website at 3 April,2019 or investor relations e-mail notified through the SET news system.
- Shareholders are fully and independently given opportunities to ask questions, express opinions and suggestions.
- The company fully facilitates shareholders in exercising their rights to attend meetings and cast votes. The meetings are held on working days at hotels in Bangkok and Bangkok suburb areas where transportation is convenient for the shareholders travelling to attend the meetings and prepare a revenue stamp for the shareholder proxy.
- All directors and high-ranking executives attend the meeting and address questions raised in the shareholder's meetings together.
- After the meetings, the company posts the voting results for each agenda from the shareholder's general meetings on the same day at the company's website, at 25 April,2019 and prepares minutes to the meetings with accurate and complete data disclosed via the company's website within 14 days from the meeting date, so shareholders are able to verify the results. The company post it at 9 May,2019
- The company employs technology in the shareholder's meetings in terms of shareholder registration, vote counting and display so the meeting can proceed quickly, accurately and precisely.

Section 2: The Equitable Treatment of Shareholders

The company has policies for practicing and protecting the rights of every shareholder equally and fairly, including shareholders who are executives, shareholders who are not executives, Thai shareholders or foreign shareholders, major shareholders or minor shareholders and corporate shareholders. Shareholders are entitled to equal fundamental rights.

- The company allows shareholders who are unable to attend meetings to authorize an independent director or an individual as a proxy to attend the meeting on the shareholder's behalf.
- The company allows shareholders to propose issues to be listed as meeting agendas and nominate persons as director candidates in the shareholder's meeting in advance 92 days in line with criteria set by the company as posted at the website <http://www.qtc-energy.com>. For 2019 the company post it between 3 September,2019 until 3 December ,2019
- 2019, the company will not add meeting agendas without sending notification to shareholders, particularly agendas that are important and require time to study information before making decisions.
- The board of directors grants shareholders opportunities to exercise the right to appoint individual directors and encourages the use of voting cards to ensure voting transparency.
- The board of directors sets up measures to prevent insider trading by related individuals, including directors,

executives, employees, employees as well as the spouses and underage children of the aforementioned individuals.

- The board of directors has also set up punitive regulations on the company's disclosure of information, or the use of the company's information for personal gain in line with the policy to prevent insider trading.
- The company educates directors and its executives on the burden and duty to report shareholdings of the directors as well as the director's spouses and underage children, and to report changes in shareholdings to the Securities and Exchange pursuant to Article 59 and the punitive clauses of the Securities and Exchange Act of 1992.

Section 3: The Role of Stakeholders

The company gives importance to the rights of stakeholders and treats all related parties with fairness, as follows:

- **Employees:** The company is aware of the importance of every company employee who will take part in pushing the company toward developing its business to the future. Therefore, the company is focused on continually developing the capabilities, knowledge and skills of employees, including considerations of suitable remuneration according to the knowledge and capacity of each employee in addition to the maintenance of work environments by considering quality of life and occupational safety. The company treats every employee equally and fairly.
- **Trading Partners and Trade Accounts Receivable:** The company treats trading partners who are suppliers and financial debtors fairly, equally and without taking advantage by strict adherence to trading conditions and/or agreements made with one another in order to improve business relations in the interests of both parties.
- **Customers:** The company pays attention to customers and takes responsibility by focusing on production of high quality standardized products and responding to the needs of customers while maintaining customer confidentiality. The company also gives importance to setting proper equal prices for products sold to customers.
- **Competitors:** The company behaves in compliance with the rules of good competition and set laws, maintaining the norms of codes of conduct for competition with avoidance of fraudulent methods which would destroy competitors.
- **Community and Society:** The company conducts its business with consideration of environmental impact. The company emphasizes continually building conscience, social and community responsibility in the company and support of activities in the interests of the public without violating laws.
- The company has a compensation measures published in the company's code of conduct in case where stakeholders are damaged by the company's violation of the stakeholder's legitimate rights.
- The company declares that directors, executives and employees who learn of important inside information potentially affecting securities trading prices must stop trading the company's securities within one month before the company announces its performance or before the inside information is disclosed to the public.
- The company has clear procedures for cases where persons disclose matters of legal violation, financial reporting accuracy, internal control errors or misconduct. These persons can report such matters by letter to the board of audit. Furthermore, the company has set up measures to protect the informants' rights.
- In order to lead to earnest practice, the company has established a manual on ethics as a part of discipline. The directors, executives and employees at all levels are required to strictly adhere to the aforementioned and violations or non-compliance will be subject to disciplinary action under the regulations governing human resources management.
- The company has set policy involving conflicts of interest in the manual on ethics in order to prevent the use of opportunities for seeking personal gain.

Notification of Complaint Policy

The committee provides employees and interested persons channels of providing complaints, comment and inform the trace of any illegal action through mail to the audit committee of the company at: QTC Energy Public Company Limited 2/2 Soi Krungthep Kritha 8 Yaek 5, Krungthep Kritha Road, Huamark sub-district, Bangkok district, Bangkok 10240 or send e-mail to audit@qtc-energy.com

Section 4: Disclosure and Transparency

The board of directors places importance on correct, complete and transparent information disclosure, from reports on financial data and general data according to the criteria of the SEC and the Stock Exchange of Thailand to the key information which may affect the company's security's prices and potentially affect the decision-making process of the company's investors and stakeholders, so the company's related individuals receive equal the information. Following this proposed sale of stock and following the company's listing on the Stock Exchange of Thailand, the company will disclose information to the shareholders and the public via Stock Exchange of Thailand data dissemination channels and the company's website at <http://www.qtc-energy.com>.

The board of directors is aware of its responsibilities and firmly committed to strictly overseeing compliance with the laws and regulations related to information disclosure and transparency as follows:

- The company publishes information in line with the set criteria through channels of the SET, Annual Disclosure Form (Form 56-1) and the Annual Report (Form 56-2) and via the company's website in both Thai and English with regular information updates.
- The board of directors reports corporate governance compliance results through the Annual Disclosure Form (Form 56-1) and the Annual Report (Form 56-2) and company's website.
- The board of directors compiles reports on the board of directors' responsibilities for financial transactions displayed together with the auditor's report and arranges for reports on corporate governance by the Board of Audit in the Annual Report (Form 56-2).
- Annual Disclosure Form (Form 56-1) and the Annual Report (Form 56-2) the board of directors publishes name list, roles and responsibilities of members of the board of directors and sub-committees, number of meeting and number of meetings attended by each director in each year through the Annual Disclosure Form (Form 56-1) and the Annual Report (Form 56-2).
- The company has set policy for information disclosure through the Annual Disclosure Form (Form 56-1) to assure compliance with the Capital Market Supervisory Board's notification on the criteria, terms and methods for information
- disclosure regarding a company's financial status and business performance in the following areas: 1) Policy and Overview of Business Operations; 2) Business Characteristics; 3) Risk factors; 4) Assets utilized in business operation; 5) Legal disputes; 6) General and Other Relevant Information; 7) Securities and shareholders information; 8) Management; 9) Corporate Governance; 10) Corporate Social Responsibility; 11) Internal Control and Risk Management; 12) Related Party Transactions; 13) Financial information; 14) Management Discussion and Analysis.
- The board of directors and executives report shareholdings and the changes in shareholdings in line with regulations set by the Securities and Exchange Commission.
- The first four directors and executives counted from the Chief executive officer are under obligation to submit a report on their own stake holdings and the stake holdings of related individuals to the chairman of the board and the chairman of the Board of Audit with disclosure of information for all directors' awareness in line with the Securities and Exchange Act of 2008. The board of directors has set policy to designate executive level employees with the title of deputy manager and manager to submit to the Board of Audit their personal stake holdings and the stake holdings of related individuals in order to assure transparency and fairness in business conduct.
- The board of directors arranges for the maintenance of effective internal controls in order provide reasonable assurance that accounting records are recorded accurately, completely and sufficiently to maintain the company's assets, and in order

to be aware of the weaknesses so misconduct or significant irregular operations can be prevented. The board of directors has established the Board of Audit composed of non-executive directors serving to audit financial transactions, related party transactions and internal control systems. The Board of Audit directly reports to the board of directors.

- The company has established an investor relation unit for the purpose of communications with outside individuals, namely, shareholders, institution investors, general investors and related public analysts as follows:
 1. To disclose important information for public awareness.
 2. To thoroughly publish information to the people.
 3. To clarify rumors or news.
 4. To prevent the promotional disclosure of unreasonable information.
 5. To use inside information in the trading of listed companies with accuracy, sufficiency, modernity, equity, transparency and fairness.
 6. To carry out procedures when the securities trading of listed companies deviates from the market's normal conditions.

he unit can be contacted through the following channels:

Telephone	: (66) 2379 3089, extension 241
Fax	: (66) 2379 3099
Email	: ir@qtc-energy.com
Website	: http://investor.qtc-energy.com

In addition, the company has appointed the Chief Executive Officer or the Managing Director as the party with the authorization to provide the aforementioned information.

- The company has appointed contact persons who are authorized to coordinate with the SET in disclosing information.
 1. Matters on the disclosure of information in line with events occurring, namely, asset acquisition/discharge (sales) transactions, related transactions, shareholders' meeting schedules, changes in directors and auditors, relocating headquarters, minutes to the shareholders' meetings and investment projects, dividend payments/ dividend payment suspensions are to be made by the Managing Director.
 2. The disclosure of information according to accounting cycle, namely, annual financial statements, and quarterly financial statement, Annual Disclosure Form (Form 56-1) and the Annual Report (Form 56-2) are to be made by the Managing Director.
- The Chairman of the Board or the Managing Director are the parties authorized to provide general news and information on corporate management to the media.
- Appointing contact persons with other related agencies:
 1. The corporate secretary is the party to coordinate with Thailand Securities Depository Company Limited
 2. The corporate secretary is the party to coordinate with the Securities and Exchange Commission.

Section 5: Responsibilities of the Board of Directors

The company gives importance to showing the duties and responsibilities of directors in order to maintain the interests of stakeholders and shareholders such as setting annual strategies for business practices and reviewing the aforementioned strategies semi-annually and monitoring performance audits. And to ensure transparent business practices for added company value and sustainability, the company will take the following actions:

- 5.1 The board of directors is made up of qualified experts with knowledge, ability and experience at the executive level from various corporations. The board of directors is able to use its experience, knowledge and ability to effectively develop and set the company's policies and governance to maximize benefits to the company and shareholders. The board of directors plays a significant role in setting corporate policies and overall business in addition to supervising, auditing and monitoring management performance and evaluating the company's performance according to plans. Each director is allowed to hold the office of director for no more than three listed companies.

- 5.2 The company has set policy for the Chairman of the Board and the Managing Director are held by different persons in order to prevent any one person from holding absolute power in any specific matter. The board of directors will set the scope of the power and responsibilities in addition to selecting the persons to hold the aforementioned offices.
- 5.3 The number of companies in which each director holds office must be compliant with good corporate governance and each director must be a director in no more than three listed companies.
- 5.4 The Managing Director and high-ranking executives can hold the office of director in no more than three companies, and must be approved by the board of directors in advance.
- 5.5 Each independent director may be an independent director for no more than nine consecutive years.
- 5.6 The board of directors will appoint a new director to serve for the remaining term of office for the previous director with approval from the board of directors.
- 5.7 The board of directors discloses information on office holding in other companies to the shareholder's awareness in the Annual Disclosure Form (Form 56-1) and the Annual Report (Form 56-2).
- 5.8 The company has policy for non-executive directors to hold meetings for the purpose of discussing various problems concerning management issues of interest without the presence of management at least once per year. In 2019, the aforementioned meeting was held once on 21 March, 2019.
- 5.9 The company's board of directors has participated with the management in setting the company's vision, mission, strategies, goals, business plans and budgets. Thus, the company has scheduled annual reviews of the company's vision, mission, strategies, goals, business plans and budgets.
- 5.10. The Roles, Duties and Responsibilities of Directors

The company stipulates that directors comply with the code of best practice in line with SET guidelines. Directors must understand and be aware of their roles, duties, and responsibilities, performing those duties in compliance with the law, company objectives and regulations as well as shareholders' resolutions with integrity, honesty and maximum consideration of the interests of the company and its shareholders. Director's roles, duties and responsibilities are as follows:

1. The board of directors must arrange a general shareholder's meeting within four months from the end of the company's accounting cycle.
2. The board of directors must arrange a meeting of the company's board of directors at least every three months.
3. Arranges a credible accounting system, financial statement reports and financial audits for the company. The board of directors must arrange credible systems for accounting, financial reports and auditing, including efficient and effective systems for internal control, internal auditing and risk management.
4. The board of directors must arrange the company's balance sheets and profit-loss statements at the end of the company's accounting cycle, which must be audited by an auditor and presented to the meeting of shareholders for consideration and approval.
5. The board of directors must set the company's goals, guidelines, policies, business plans and budgets along with monitoring and supervision, so the administration and management of executives concurs with work planning policies and setting budgets with efficiency and effectiveness.
Furthermore, the scope of the board of directors' duties includes direction for the company to comply with laws on securities and securities exchanges, announcements of the Capital Market Supervisory Board, specifications of the Stock Exchange of Thailand such as engaging in connected transactions, acquisitions or sales of significant properties, or laws associated with the company's businesses.
6. The board of directors must consider reviews, audits and approvals of plans by the executives for business expansion, large investment projects, including participation in investments with other business operators proposed by the executives.
7. The board of directors must continually monitor performance for concurrence with plans and budgets.
8. The board of directors must consider designating executive structures with authority to appoint the Executive Board of Directors, Managing Directors and other sub-committees as deemed fitting, such as the Audit Committee, the

Recruitment Committee, the Remuneration Committee, etc., including the setting of the scopes of authority and duties of the Executive Board of Directors, Managing Directors and various appointed sub-committees.

9. The board of directors may authorize a director, several directors, or any other persons to perform any actions on behalf of the board of directors under the control of the board of directors, or the board of directors may authorize the aforementioned persons to have authority as deemed necessary by the board of directors within the period of time the board of directors deems fitting. The board of directors may cancel, withdraw, change or revise authorizations as deemed necessary. The power to authorized must not be in a manner that would enable the aforementioned individual to consider or approve transactions or persons with potential conflicts of interest, stakeholders or any other types of conflicts of interest occurring with the company or its subsidiaries (if any), unless the approval involves normal business transactions in line with general trade conditions or compliance with policy and criteria already considered and approved by the board of directors under the criteria, terms and methods set forth regarding related transactions and acquisitions or discharges of listed company main assets pursuant to SEC and/or SET notifications and/or any other notifications by related agencies.
10. The board has prepared corporate governance policy in writing with performance evaluation and policy review at least once a year, promoting the preparation of written code of conduct so all directors, executives and employees understand the ethical code by which the company conducts its business, monitors compliance with the aforementioned ethical codes, and sets up risk management policy with evaluation of risk management effectiveness at least once a year.

5.11 Development of Directors and Executives

- **Orientation for New Directors**

The company's board of directors has scheduled orientation for every new director in order to build knowledge and understanding about the business, including the performance of various company tasks. In order to prepare directors for the performance of their respective duties, the company has policy for promoting the building of new knowledge for every director in learning about good governance, industrial conditions, technology businesses and new innovations in order to enable directors to efficiently take over their respective duties as soon as possible. The Corporate Secretary will coordinate various issues as follows:

1. Things to Know: Business infrastructure, director infrastructure, scope of duty, laws directors need to know.
2. General Business Knowledge: Guidelines for practice in line with various policies and visiting the production process.
3. Make arrangements for collaborative meetings with the entire board of directors, so in-depth questions can be asked about the business operations.

In 2019, the company provided orientation for four new directors, namely, Mr. Preedee Ngamsantikul and Mr. Phairoj Boonpun, The secretary prepared various information that the aforementioned directors needed to be aware of and to follow various regulations and rules in addition to asset purchase-sales and business ethics. In addition, they are was in Director Accreditation Program (DAP) Class,164/2019

- **Learning Development**

The company's board of directors has policy for supporting and facilitating training to impart knowledge about the company's governance system, which included directors, auditing directors and recruitment directors in the setting of remuneration and corporate governance, and directors for risk management and the corporate secretary in order to improve practice on a continual basis as arranged by the Stock Exchange of Thailand, the Office of the Securities and Exchange Commission and courses sponsored by the Thai Institute of Directors Association (IOD)

It also encourages the Board to have knowledge of the administration from Institutes, Directors in the year 2018 which was attended workshops and seminars are as follows.

Name - Surname	Course	Institute
1. Mr. Viraphonh Viraravong	- Director Accreditation Program (DAP) Class 164/2019	IOD
2. Mr. Phairoj Boonpun	- Director Accreditation Program (DAP) Class 164/2019	IOD
3. Mr. Phonrat Piathanom	- Advanced Audit Committee Program (AACP) Class 33/2019	IOD
4. Mr. Ruangchai Kritsnakriengkrai	-TFRS 9	Federation of Accounting Professions

In addition, the company has made arrangements for documents and information for the benefit of new directors in performing their respective duties as well as a manual on business characteristics and guidelines for conducting the company's business operations for new directors. The aforementioned was given to the Recruitment, Remuneration and Corporate Governance Committee with follow-up on succession plans for managing directors, deputy managing directors and executives. Hence, the executives who have been assigned the role of succession will be developed according to Individual Development Plans in order to prepare them for future succession.

5.12 Making Succession Plans

In order to assure that the company has knowledgeable directors with sufficient ability to perform their respective duties, the company's board of directors has made capacity building plans for high ranking executives by appointing the Remuneration and Good Governance Committee with the task of making plans for succession in the positions of managing director, deputy managing director and department manager based on consideration of knowledge, ability and experience required for each position for the selection of executives possessing set qualifications with ability to succeed to each position. Furthermore, the Human Resources Management Department has been assigned the task of monitoring training and the development of knowledge and ability for persons succeeding to the positions of managing director, deputy managing director and department manager.

5.13 Report of Interest of Directors and shareholding report

Our company assigns the committees and Board of Directors to report their own interests and those of related persons when they commence to hold the position or when there is any changing of information. In addition, they have to revise all information annually according to rules and methods of report on interests of company's committees and executives defined by Board of Directors. In 2019, the company stipulated that directors, executive directors and executives send reports on stake holdings on 19 December 2019.

Corporate Social and Environmental Responsibilities

QTC Energy public company limited is committed to conduct its business under the corporate governance. Based on principles of good governance coupled with attention to environmental care. There is the sense of social responsibility truly. In consideration of those who are consistently involved both inside and outside of the Organization, from employees, customers, shareholders, communities and the broader society to contribute to the development of sustainable business to provide a corporate joint venture successful. There are standard actions seriously and ensure that the actions are based on the defined vision and mission. Build confidence to stakeholders with a real organization, as well as to demonstrate social responsibility in various aspects of the policy have been set up a sustainable development policy and the appointment of the Board of Directors. And the Board of supervision work to make sure for the details listed in the sustainable development report.



Internal Control and Risk Management

In Board of Directors Meeting No. 2/2020 on 19 February 2020 where all three audit directors were in attendance, the board of directors assessed the adequacy of the company's internal control system risks by submitting inquiries to the Management Department and was able to draw conclusions based on the assessment of the company's internal control system in terms of the following aspects:

1. Control Environmental
2. Risk Assessment
3. Control Activities
4. Information and Communication Measures
5. Monitoring

The board of directors has rendered the opinion that the company already has adequate and appropriate internal control.

Internal Control-Related Performance

The company has a Board of Audit to perform the duty of checking to ensure that the company has proper and effective internal control systems and internal audits. The Board of Audit has also checked the company's performance to ensure compliance with the laws governing securities and stock exchanges, the specifications set forth by the Stock Exchange of Thailand and laws related to the company's businesses. The Board of Audit will hold meetings at least once every quarter in order to consider and take steps toward ensuring the compilation of accurate financial reports with complete and sufficient disclosure, including the consideration of related transactions or transactions with potential conflicts of interest to ensure compliance with the law and the specifications set forth by the Securities and Exchange Commission and the Stock Exchange of Thailand. Auditors are present at the meetings in order to observe based on the company's audits.

The Company don't have internal audit of the company itself, the company has hired BK IA & IC Co., Ltd. as auditors of the company for the year 2019, the company BK IA & IC Co., Ltd. has assigned Miss Boonnee Khusonsopit is the primary responsible to act in the company's internal auditors. The Audit Committee has considered the property of the company, BK IA & IC Co., Ltd. and Boonnee Khusonsopit charity overthrew governance, then that is sufficient. with such duties as an independent. And experienced in performing the audit in a business or industry, with the same company for 23 years. So subject to review and approve the appointment, transfer and dismissal of the incumbent head of the internal audit department of the Company to be approved by audit Committee.

Related Transactions

1 Relationship Characteristics

QTC Energy Public Company Limited (“Company”) has transactions with persons with potential conflicts of interest, composed of shareholders and/or company executives. Related company means a company that holds persons who might have conflicts of interest with the company and relationships between the executives and shareholders of the aforementioned company. The summary of relationship characteristics is as follows:

Persons with Potential Conflicts of Interest	Characteristics of Relationship
QTC Service Chiang Mai Co., Ltd.	Mrs. Sasipim Wongdam is a director with signatory authority and a shareholder of QTC Service Chiang Mai holding 99.94 percent of shares who is related as the younger sister of Mr. Poonphiphat Tantanasin and holding the positions as Chief of the Executive Officer of the company. In addition, the ex-wife and child of Mr. Poonphiphat Tantanasin holds a total of 7.07 percent of the company's shares.
Mr. Poonphiphat Tantanasin	Holds the position of Chief of the Executive Officer. In addition, his ex-wife and child hold a total of 7.07 percent of the company's shares.
QTC PANCO CO., LTD., Electrical Transformer Manufacturing and Distribution Business.	A subsidiary which the company holds 85 percent of issued and paid up shares of QTC Panco Co., Ltd. In addition, the subsidiary also has similar director, namely, Mr. Poonphiphat Tantanasin who holds positions as director of the company.
PPWE Co., Ltd., Investment in Energy Business.	A joint company which the company holds 49.98 percent of issued and paid up shares of PPWE Co., Ltd. In addition, the joint company also has similar director, namely, Mr. Poonphiphat Tantanasin who holds position as director of the company.
QTC Global Power Co., Ltd., Investment in Energy Business.	A subsidiary which the company holds 99.99 percent of issued and paid up shares of QTC Global Power Co., Ltd. In addition, the subsidiary also has similar director, namely, Mr. Poonphiphat Tantanasin who holds positions as director of the company.
Q Solar 1 Co., Ltd., Investment in Solar Energy Business.	An indirect subsidiary which QTC Global Power Co., Ltd. holds 100.00 percent of issued and paid up shares of Q Solar 1 Co., Ltd. In addition, the indirect subsidiary also has similar director, namely, Mr. Poonphiphat Tantanasin who holds positions as director of the company. Shares were held by QTC Global Power Co., Ltd. with 2,199,998 shares, Mr. Poonphiphat Tantanasin with 1 share and Miss Sasikarn Tantanasin with 1 share. The total number of shares held was 22,000,000 shares.
Green Earth Power (Thailand) Co., Ltd., Renewable Energy Business (Ended on March 31, 2018)	An indirect joint company which QTC Global Power Co., Ltd. holds 15 percent of issued and paid up shares of Green Earth Power (Thailand) Co., Ltd. In addition, the indirect joint company also has similar director, namely, Mr. Poonphiphat Tantanasin who holds positions as director of the company.

2 Description of Related Transactions

In 2019 and 2018, the company conducted transactions with persons with potential conflict of interests according to the details shown in the list as follows:

1. Sales of Goods and Services

Person with Potential Conflict of Interests	Transaction Type	Value of Related Transaction (million baht)		Necessity and Reasonability of Transaction
		2019	2018	
QTC Service Chiang Mai Co., Ltd. ("QTC Chiang Mai"), Electrical System Service Business.	Sales of goods and services	4.95	3.88	The company sells electrical transformers and raw materials that are components to electrical transformers, namely, transformer oil, low-power terminal tugs, gaskets, insulators, etc., as well as providing electrical transformer services to QTC Service Chiang Mai, which is a retail representative of the company. The sales prices of products to QTC Service Chiang Mai Co., Ltd. were discount prices equal to the rates offered to other retail representatives of the company and had the same trade conditions as other retail representatives of the company. The Audit Committee had evaluated the transaction and deemed the aforementioned goods sales transaction to be reasonable according to ordinary course of business of the company.
	Account receivables	1.05	0.70	

2. Selling and administrative expenses transactions

Person with Potential Conflict of Interests	Transaction Type	Value of Related Transaction (million baht)		Necessity and Reasonability of Transaction
		2019	2018	
QTC Service Chiang Mai ("QTC Chiang Mai"), Electrical System Service Business.	Purchase of goods and services	0.02	0.01	The transaction incurred as an expenditure from the company employing QTC Service Chiang Mai to provide services for the company's clients located in areas/provinces near the office of QTC Service Chiang Mai Co., Ltd. such as fees for electrical transformer transportation, inspection, repairs, cranes, etc. as the trucks and/or service staffs of the company were fully occupied with other works and unable to provide service to the aforementioned clients. In addition, QTC Service Chiang Mai Co., Ltd. is able to provide fast and reliable services to clients. The service fees for QTC Service Chiang Mai collected from the company is comparable to expenses that actually incurred from services provided by the company and/or comparable to service fees for employing external parties. The Audit Committee evaluated the aforementioned transaction and holds the opinion that the aforementioned transaction incurred due to necessity and the service fee rates was reasonable and appropriate.

Person with Potential Conflict of Interests	Transaction Type	Value of Related Transaction (million baht)		Necessity and Reasonability of Transaction
		2019	2018	
PPWE Co., Ltd., Energy Investment Business.	Interest received	0.65	0.91	The company provided short-term loan to PPWE Co., Ltd. to be used as working capital and conducting feasibility studies in investment projects with appropriate interest rates. The Audit Committee has evaluated the transaction and holds the opinion that the aforementioned transaction occurred due to necessity and was reasonable.
	Other receivables	0.20	0.16	
	Short-term loan	11.00	14.00	
QTC Global Power Co., Ltd., Investment in Renewable Energy Business	Interest received	-	7.21	As of 31 December 2017, the Company offered a short-term loan for QTC Global Power Co., Ltd. to use as current capital and to study feasibility of investment projects in the amount of 654.10 million baht at an interest rate of 4.0 percent per year without guarantees. The loan was due to be repaid when reminded on 31 December 2018. The Company was repaid the entire amount. In 2019, no further loans were made between businesses. Thus, in 2019, the Company had no transactions showing interest received. The Audit Committee Considered and believed the aforementioned transactions occurred because of necessity and reason.
	Other receivables	-	-	
	Administrative expenses	1.17	1.04	
	Short-term loan	0.52	0.52	

Measures or Procedures for Approving Related Transactions

The company has stipulated measures for conducting related transactions between the company and persons with potential conflict of interests by assigning the Audit Committee to give opinions on the necessity of the transactions, reasonability and propriety of the transaction amounts with considerations based on various conditions according to normal course of business at fair market values comparable to prices proposed by external parties. In cases where the Audit Committee lacks the expertise to evaluate a related transaction that might occur, the company will assign a persons with specialized knowledge and skills such as an auditor, asset valuator, legal office, etc., who are independent from the company and person with potential conflict of interest in the aforementioned related transaction, to provide information to accompany the decision of the Audit Committee. Accordingly, the Audit Committee will propose the results to the meeting of the Board of Directors or shareholders, depending on the case.

Furthermore, the company has stipulated measures to prohibit executives or stakeholders from participating in approving transactions in which they have direct or indirect interest. In addition, the Board of Directors is required to oversee the company to ensure compliance with the law governing securities and the Stock Exchange and regulations, notifications, orders or requirements of the Capital Market Supervisory Board and the Stock Exchange of Thailand as well as complying with regulations on disclosure of information on related transactions and obtainment or sales of important asset of companies or subsidiaries in addition to complying with the accounting standards set by the Federation of Accounting Professions and Licensed Auditors of Thailand. Additionally, the company discloses related transactions in annotations accompanying financial statements audited or examined by the company's auditor.

Possibilities of Related Transactions in the Future

The company might continuously conduct related transactions in the future in line with normal course of business operations and will clearly specify policies for conducting related transactions. Prices and trade conditions will comply with the normal business operations as specified for unrelated persons and/or companies such as sales of goods or provision or obtainment of services. Related transactions shall occur due to necessity for the company's business operations and for the benefit of the company. Accordingly, the Audit Committee will make considerations and examine practices to ensure compliance with criteria and provide opinions on suitability of transactions that occur on a quarterly basis.

As for sales of goods to QTC Service Chiang Mai Co., Ltd. and QTC Panco Co., Ltd. (Laos), which are entities with potential conflicts of interest in the future, the company had prescribed policies for specifying prices and discounts for sales of electrical transformers and raw materials or equipment that are components to electrical transformers for each type of client, including sales representative, which has been effective as of May 15, 2011. The purpose of this is to increase clarity and allow price and discount comparisons in the sales of goods to QTC Service Chiang Mai Co., Ltd., which has to be according to prices and discounts provided to other sales representatives, for the considerations and opinions of the Audit Committee on fairness and reasonability of goods sold to both companies to be provided systematically, especially in instances where the company does not sell products to other sales representatives.

For potential related transactions not occurring due to normal business operations in the future, the company has assigned the Audit Committee to review practices in line with criteria and provide explanation about the reason for conducting the aforementioned related transactions before the company conducts the aforementioned transactions by complying with the measures and procedures for approving related transactions as mentioned above. In any case, for related transactions that might cause conflicts of interest in the future, the Board of Directors is required to ensure compliance with laws governing securities and the Stock Exchange and rules, notifications, orders or specifications of the Capital Market Supervisory Board and the Stock Exchange of Thailand along with following regulations on disclosure of information about related transactions and obtainment or sales of assets of companies or subsidiaries along with standards set by the Federation of Accounting Professions and Licensed Auditors of Thailand.



Board of Audit Report

The Audit Committee of QTC Energy PCL is composed of Mr. Natthaphon Lilawatthanun as the Audit Committee Chairman and Mr. Phonrat Piathanom and Mrs. Wasara Chotithammarat as the audit directors. The Audit Committee's important scope and responsibilities pursuant to its charter are to oversee and ensure that the company's financial reports are in accordance with generally accepted accounting standards and principles, reviewing the company's performance to be in accordance with good corporate governance principles with effective system of internal control and pursuance to related laws and regulations, along with looking after cases of conflicts of interest between the company and related parties. Hence, the company's Audit Committee has organized five meetings in 2019 with the essential content as follows:

1. The Audit Committee has reviewed the quarterly finances and financial statement for 2019 with the management and auditor to ensure that the company's financial report was made correctly as should be according to generally accepted accounting standards and adequate and complete disclosure of information credibly in the footnotes of financial statements along with providing observations and acknowledgement of beneficial resolutions to the company's problems.
2. Discussion of the disclosure of information of related transactions and transactions related to the company and people who might be in conflict of interest. The Audit Committee deems that the disclosure of information of related transaction and transactions related to the company is correct, complete and sufficient and in accordance with business conditions and criteria set by the Stock Exchange of Thailand.
3. Govern and ensure that internal audits are carried out independently by employing BKIA&IC CO., LTD., which is a company that provides internal and external audit services, as the company's internal auditor with the Audit Committee as the considerer of the annual internal audit plan, reporter of internal audit results, follower of internal audit results for the management, along with providing advice to the internal auditor in order to ensure confidence that the annual internal audit plan is carried out effectively and efficiently. The internal audit results for 2019 found no indicators of corruption or flaws in internal control in essential content.
4. Evaluation of the internal control system in accordance with set guidelines by the Securities and Exchange Commission, which governs corporate internal control, risk management, information technology system control and data communication along with monitor systems. The Audit Committee deems the company's internal control to be adequate and effective.
5. Consideration for the appointment of and proposal for remuneration payment to the auditor for 2020. A proposal was made for the company's board of directors to appoint Mr. Narin Churamongkol, Certified Public Accountant No. 8593 and/or Mr. Teerasak Chuasrisakul, Certified Public Account No. 6624 and/or Miss Kanyanat Sriratchatchaval, Certified Public Accountant No. 6549 and/or Mr. Somkid Tiatragul, Certified Public Accountant No. 2785 of Grant Thornton Limited to be the auditors of the Company with their remuneration 1,585,000. baht for later proposal to the General Shareholders' Meeting.

Hence, the Audit Committee has performed its duties thoroughly and independently, rendered opinions directly without limitations to information access, and has given importance to good corporate governance in accordance with principles set by the Stock Exchange of Thailand with transparency and good ethics in order to establish confidence in shareholders, investors, customers and all related parties.

On behalf of the Board of Audit,



(Mr. Natthaphon Lilawatthanun)

Chairman, Board of Audit

14 February 2020

Board of Nomination, Remuneration and Corporate Governance Committee Report

The Nomination, Remuneration and Corporate Government Committee of QTC Energy PCL is composed of two independent directors and one executive director. Mr. Phonrat Piathanom, Independent Director, is the Chairman of the Nomination Committee while Dr. Kamol Takabut, Independent Director, and Mr. Poonphiphat Tantanasin, Executive Director, have scopes of duties and responsibilities according to the Nomination, Remuneration and Corporate Government Committee Charter.

In 2019, the Nomination, Remuneration and Corporate Government Committee meeting four times. Every director attended meetings to follow-up and give consideration to important topics assigned by the Board of Directors, which can be summarized as follows:

1. The Committee considered performance assessments of the Company's directors, minor committee directors and high-ranking executives.
2. The Committee considered selections of persons to fill positions of directors who resigned with line good corporation governance and proposed for the Board of Directors to consider appointments.
3. The Committee considers and reviews corporate governance policies.
4. The Committee considers and reviews business ethics to be consistent with current situations.
5. The Committee considers and reviews Sustainability development.
6. The Committee considers remuneration of the Company's directors, executive directors and sub-committee members and bonus's employee before presentation to the Board of Directors and shareholders for consideration of approval by considering suitability for assigned duties and responsibilities, the Company's performance and overall economic conditions.
7. The Committee acknowledges progress in succession plan preparations for high-ranking executives and career path preparations. To prepare the plan for retain the employee.
8. The Committee selects and nominates individuals to director positions by considering names nominated by shareholders, qualifications and diversity of knowledge, capabilities, experience and gender, etc., before presenting names to the Company's Board of Directors and shareholders. The Committee supports minor shareholders to propose agendas and nominate directors to fill directors who completed terms in advance on 3 September 2019 – 3 December 2019 through the Company's website.

On behalf of the Nomination, Remuneration and Corporate Governance Committee,



(Mr. Phonrat Piathanom)

Chairman, Nomination, Remuneration
and Corporate Government Committee

Board of Directors' Reports & Responsibility for Financial Reports

Dear Shareholders,

The board of directors is responsible for the financial statements of QTC Energy PCL, including the financial information appearing in the company's annual report and financial statements. The board of directors holds the view that the company's financial statements for the year ending 31 December 2019 have been compiled in compliance with generally accepted accounting principles by using proper accounting policy in line with the principles of caution and consistent practice. Moreover, the company has carefully exercised discretion with reasonable estimations in the compilation. Moreover, sufficient information has been disclosed in the remarks accompanying the company's financial statements. Hence, the aforementioned financial statements have passed the audit and unconditional opinions have been rendered by the independent licensed auditor.

The board of directors supports the company in good corporate governance with structural development for the board of directors in order to promote continued good corporate governance and efficient work performance with transparency and reliability. The board of directors has appointed a board of audit composed of three independent directors as the parties responsible for checking the financial reporting system, the internal control systems and internal audits. The board of audit has rendered opinions concerning the aforementioned matters as appearing in the board of audit's report as already shown in the annual report.

The board of directors has rendered the opinion that the company's internal control systems are sufficient and appropriate. Moreover, the aforementioned have the ability to build reasonable confidence in the reliability of the company's financial statements for the year ending 31 December 2019.



(Mr. Krirk-Krai Jirapaet)

Chairman of the Board

To the Shareholders of QTC Energy Public Company Limited

To the Shareholders of QTC Energy Public Company Limited

Opinion

I have audited the consolidated and separate financial statements of QTC Energy Public Company Limited and its subsidiaries (the "Group"), which comprise the consolidated and separate statement of financial position as at 31 December 2019, and the consolidated and separate statements of profit or loss and other comprehensive income, statement of changes in shareholders' equity and statement of cash flows for the year then ended, and notes to the consolidated and separate financial statements, including a summary of significant accounting policies.

In my opinion, the accompanying consolidated and separate financial statements present fairly, in all material respects, the consolidated and separate financial position of QTC Energy Public Company Limited and its subsidiaries as at 31 December 2019, and the consolidated and separate financial performance and cash flows for the year then ended in accordance with Thai Financial Reporting Standards.

Basis for Opinion

I conducted my audit in accordance with Thai Standards on Auditing. My responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Consolidated and Separate Financial Statements section of my report. I am independent of the Group in accordance with the Federation of Accounting Professions' Code of Ethics for Professional Accountants that is relevant to my audit of the consolidated and separate financial statements, and I have fulfilled my other ethical responsibilities in accordance with these requirements. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Key audit matters

Key audit matters are those matters that, in my professional judgment, were of most significance in my audit of the consolidated and separate financial statements of the current period. These matters were addressed in the context of my audit of the consolidated and separate financial statements as a whole, and in forming my opinion thereon, and I do not provide a separate opinion on these matters.

Key audit matter	How my audit addressed the area of focus
<p><i>Impairment of investments in subsidiary and associated companies</i></p> <p>As at 31 December 2019, the Company has investments in subsidiary and associated companies - at cost of Baht 718.16 million and Baht 0.50 million, respectively, and allowance for impairment of investments in subsidiary and associated companies of Baht 134.66 million and Baht 0.50 million, respectively.</p> <p>The impairment test of investments in subsidiary and associated companies require significant judgment and assumption of management with complex consideration, specifically the assumption about the cash flows projection of business and the consideration of discount rate for determining of projected cash flows which may affect by changes in the economic condition, market situation and specific risk of assets.</p> <p>Refer to the notes 11 and 12 to financial statements and significant accounting policies.</p>	<p>I assessed the reasonableness of assumptions and methodology that management applied to estimate expected future cash flows by comparing with current and historical operations.</p> <p>I discussed with management the basis of assumptions used and future business plan, including reviewing underlying supporting documentation.</p> <p>I evaluated the reasonableness of the discount rate applied to calculate future cash flows and tested calculation for recoverable amount from the investments.</p> <p>I verified the mathematical accuracy of the model and inspecting inputs with supporting documents.</p> <p>I also considered the adequacy and appropriateness of disclosures in the notes to financial statements.</p>

Other Information

Management is responsible for the other information. The other information comprises the information included in the annual report, but does not include the consolidated and separate financial statements and my auditor's report thereon. The annual report is expected to be made available to me after the date of this auditor's report.

My opinion on the consolidated and separate financial statements does not cover the other information and I will not express any form of assurance conclusion thereon.

In connection with my audit of the consolidated and separate financial statements, my responsibility is to read the other information identified above when it becomes available and, in doing so, consider whether the other information is materially inconsistent with the consolidated and separate financial statements or my knowledge obtained in the audit, or otherwise appears to be materially misstated.

When I read the annual report, if I conclude that there is a material misstatement therein, I am required to communicate the matter to those charged with governance and revised a material misstatement.

Responsibilities of Management and Those Charged with Governance for the Consolidated and Separate Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated and separate financial statements in accordance with Thai Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of consolidated and separate financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated and separate financial statements, management is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Group's and the Company's financial reporting process.

Auditor's Responsibilities for the Audit of the Consolidated and Separate Financial Statements

My objectives are to obtain reasonable assurance about whether the consolidated and separate financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Thai Standards on Auditing will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated and separate financial statements.

As part of an audit in accordance with Thai Standards on Auditing, I exercise professional judgment and maintain professional skepticism throughout the audit. I also:

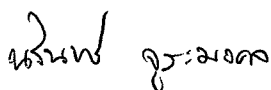
- Identify and assess the risks of material misstatement of the consolidated and separate financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the consolidated and separate financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated and separate financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. I am responsible for the direction, supervision and performance of the group audit. I remain solely responsible for my audit opinion.

I communicate with those charged with governance, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

I also provide those charged with governance with a statement that I have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on my independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, I determine those matters that were of most significance in the audit of the consolidated and separate financial statements of the current period and are therefore the key audit matters. I describe these matters in my auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, I determine that a matter should not be communicated in my report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.



Mr. Narin Churamongkol

Certified Public Accountant

Registration No. 8593

Grant Thornton Limited

Bangkok

19 February 2020

Financial Status and Performance

1 Summary of the Audit Report

- (a) The financial statement of 2017 was examined by Mr. Narin Joramongkon, Certified Public Accountant No. 8593 from Grant Thornton Co., Ltd.

The Certified Public Accountant audited the Company's financial statement and rendered the opinion that the statement of financial status as of 31 December 2017 and the Company's performance for the year ending on the same date are accurate in terms of relevant contents in compliance with Thailand's financial reporting standards.

- (b) The financial statement of 2018 was examined by Mr. Narin Joramongkon, Certified Public Accountant No. 8593 from Grant Thornton Co., Ltd.

The Certified Public Accountant audited the Company's financial statement and had the opinion that the statement of financial status as of 31 December 2018 and the Company's performance for the year ending on the same date are accurate in significant contents according to Thailand's financial reporting standards.

- (c) The financial statement of 2019 was examined by Mr. Narin Joramongkon, Certified Public Accountant No. 8593 from Grant Thornton Co., Ltd.

The Certified Public Accountant audited the Company's financial statement and had the opinion that the statement of financial status as of 31 December 2019 and the Company's performance for the year ending on the same date are accurate in terms of relevant contents in compliance with Thailand's financial reporting standards.

2 Table Summarizing Financial Status and Performance

Statement of Financial Status

	2017 (Consolidated)		2018 (Consolidated)		2019 (Consolidated)	
	Million Baht	%	Million Baht	%	Million Baht	%
Assets						
Current Assets						
Cash and Cash Equivalents	90.99	4.47	118.79	6.19	144.23	7.77
Temporary Investments	378.85	18.60	466.34	24.30	517.48	27.88
Trade Accounts Receivable						
- General Accounts Receivable – Net	280.97	13.79	255.76	13.33	123.00	6.63
- Affiliated Companies	1.84	0.09	0.70	0.04	1.05	0.06
Other Accounts Receivable						
- Ordinary Accounts Receivable	-	-	1.14	0.06	0.94	0.05
- Other Accounts Receivable – Related	1.35	0.07	0.16	0.01	0.20	0.01
Companies	151.15	7.42	175.25	9.13	198.50	10.69
Inventory – Net	17.16	0.84	29.68	1.55	26.54	1.43
Value Added Tax Pending Collection	3.99	0.20	4.12	0.21	8.00	0.43
Expenses Paid in Advance	8.78	0.43	13.11	0.68	13.18	0.71
Total Current Assets	935.07	45.90	1,065.05	55.50	1,033.12	55.65

	2017 (Consolidated)		2018 (Consolidated)		2019 (Consolidated)	
	Million Baht	%	Million Baht	%	Million Baht	%
<i>Non-Current Assets</i>						
Bank Deposits with Limited Use	21.12	1.04	21.31	1.11	21.60	1.16
Loans Provided for Related Companies – Net	17.87	0.88	6.90	0.36	-	-
Investments in Joint Ventures – Net	210.04	10.31	-	-	-	-
Other Investments	0.05	0.00	-	-	-	-
Collectible Security Deposit for Investment Project Feasibility Study	-	-	-	-	-	-
Land, Building and Equipment – Net	688.96	33.82	689.30	35.92	666.01	35.88
Computer Programs	5.50	0.27	4.19	0.22	4.51	0.24
Power Grid Connection Service Fees – Net	4.58	0.23	4.25	0.22	3.93	0.21
Electricity Sales Contract – Net	117.36	5.76	108.91	5.68	100.49	5.41
Deferred Income Tax Assets	33.27	1.63	15.95	0.83	17.04	0.92
Non-Current Assets	3.43	0.17	3.12	0.16	9.67	0.52
Total Non-Current Assets	1,102.19	54.10	853.94	44.50	823.25	44.35
Total Assets	2,037.27	100.00	1,918.98	100	1,856.37	100
<i>Liabilities and Shareholder Equity</i>						
<i>Current Liabilities</i>						
Overdraft Accounts and Short-Term Loans from Financial Institutions	320.55	15.73	202.08	10.53	77.04	4.15
Trade Accounts Payable	42.83	2.10	98.22	5.12	43.82	2.36
Other Accounts Payable	11.58	0.57	11.05	0.58	7.11	0.38
Long-Term Loans Due for Payment in One Year	66.84	3.28	75.24	3.92	24.30	1.31
Accounts Payable in Lease/Purchase Contracts Due for Payment in One Year	2.71	0.13	2.20	0.11	1.55	0.08
Employee Benefit Obligation Liabilities	0.18	0.01	0.75	0.04	0.87	0.05
Unpaid Income Tax	-	-	-	-	3.95	0.21
Unpaid Expenses	23.37	1.15	23.00	1.20	20.82	1.12
- Related Companies	-	-	-	-	-	-
Security Deposits for Goods Received	14.58	0.72	16.42	0.86	9.11	0.49
Unpaid Value Added Tax	-	-	-	-	-	-
Total Current Liabilities	493.24	24.21	440.36	22.95	199.86	10.77
<i>Non-Current Liabilities</i>						
Long-Term Loans – Net	89.40	4.39	24.30	1.27	-	-
Accounts Payable in Lease/Purchasing Contracts – Net	3.04	0.15	2.32	0.12	1.95	0.11
Employee Benefit Obligation Liabilities	9.49	0.47	10.36	0.54	15.74	0.85
Total Non-Current Liabilities	101.94	5.00	36.98	1.93	17.69	0.96
Total Liabilities	595.18	29.21	477.34	24.88	217.55	11.73

Statement of Financial Status (Continued)

	2017 (Consolidated)		2018 (Consolidated)		2019 (Consolidated)	
	Million Baht	%	Million Baht	%	Million Baht	%
Shareholder Equity						
Capital Stock						
Registered Shares	429.24	21.07	429.24	22.37	341.09	18.37
Issued and Paid Up Shares	341.09	16.74	341.09	17.77	341.09	18.37
Premium on Common Shares	1,178.83	57.86	1,178.87	61.44	1,178.87	63.50
Accumulated Profit						
Allocated – Legal Reserve	20.00	0.98	20.00	1.04	22.87	1.23
Unallocated	(99.27)	(4.87)	(98.93)	(5.16)	96.84	5.22
Other Shareholder Components	(1.20)	(0.06)	(1.51)	(0.08)	(2.54)	(0.14)
Total Shareholders' Equity of the Company	1,439.45	70.66	1,439.52	75.01	1,637.13	88.18
Uncontrolled Stakes in Subsidiaries	2.64	0.13	2.12	0.11	1.69	0.09
Total Shareholders' Equity	1,442.09	70.79	1,441.64	75.12	1,638.82	88.27
Total Liabilities and Shareholder Equity	2,037.27	100.00	1,918.98	100	1,856.37	100

Comprehensive Income Statement

	2017 (Consolidated)		2018 (Consolidated)		2019 (Consolidated)	
	Million Baht	%	Million Baht	%	Million Baht	%
Income						
Sales Income	882.11	96.43	937.29	95.81	937.16	95.04
Service Income	19.42	2.12	20.76	2.12	28.01	2.84
Other Income	13.28	1.45	20.29	2.07	20.88	2.12
Total Income	901.53	100.00	978.34	100.00	986.05	100.00
ต้นทุนและค่าใช้จ่าย						
Sales Costs	(745.37)	(81.48)	(735.90)	(75.22)	(598.36)	(60.68)
Service Cost	(15.44)	(1.69)	(11.86)	(1.21)	(16.89)	(1.71)
Sales and Management Expenses	(392.40)	(42.89)	(193.89)	(19.82)	(153.18)	(15.53)
Total Expenses	(1,153.21)	(126.06)	(941.65)	(96.25)	(768.43)	(77.92)
Profit (Loss) Before Financial Cost and Income Tax Deduction	(238.40)	(26.06)	36.69	3.75	217.62	22.07
Financial Cost	(14.73)	(1.61)	(15.17)	(1.55)	(8.87)	(0.90)
Juristic Person Income Tax	5.88	(0.64)	(17.52)	(1.79)	(8.69)	(0.88)
Profit (Loss) Shares of Joint Ventures by the Equity Method			(1.03)	(0.11)	-	-
Loss from Canceled Operations			(3.09)	(0.32)	(1.66)	(0.17)
Net Profit (Loss) for the Year	(247.25)	(27.03)	(0.12)	(0.01)	198.40	20.12
Other Comprehensive Profit (Loss) for the Year						
Loss from Estimates by Actuarial Science	(3.39)	(0.37)	-	-	-	-
Exchange Rate Difference from Financial Statement Conversion	(1.83)	(0.20)	(0.36)	(0.04)	(1.22)	(0.12)
Other Comprehensive Profit (Loss) for the Year – Net from Income Tax	(5.21)	(0.57)	(0.36)	(0.04)	(1.22)	(0.12)
Total Comprehensive Profit (Loss) for the Year	(252.46)	(27.60)	(0.48)	(0.05)	197.18	20.00
Net Profit (Loss) Per Basic Share						
Net Profit (Baht Per Share)	(0.89)	-	0.001	-	0.578	-
Par Value (Baht)	1.00		1.00		1.00	

Cash Flow Statement

(Unit Million Baht)	2017 (Consolidated)	2018 (Consolidated)	2019 (Consolidated)
Cash Flow from Operations			
Net Profit before Income Tax	(253.13)	17.40	207.09
Transactions Adjusting Net Profit as Income Tax from Operations			
Depreciation and Amortization	50.96	74.25	77.16
Allowance for Doubtful Accounts	4.26	7.28	1.42
Allowance (allowance reversal) for Outdated Goods	(5.00)	7.37	(6.91)
Profit (Loss) from Property Distribution	(2.77)	(0.55)	(1.84)
Profit(Loss) from intangible Property Distribution	-	-	0.01
Loss (Profit) from Unrealized Exchange Rates	(3.78)	(0.85)	0.19
Profit from Adjusting Unrealized Investments	-	(2.86)	(5.40)
Profit from Temporary Sale of Investments	(0.04)	(0.76)	(1.09)
Share of Losses from Joint Ventures by the Equity Method	-	1.03	-
Allowance for Employee Benefit Obligations	(2.72)	1.08	4.97
Allowance for Depreciation of Loans Provided for Joint Ventures	1.03	7.10	3.90
Allowance for Asset Depreciation	-	2.91	-
Losses from Sale of Investments in Joint Ventures	-	19.69	-
Allowance for Value Depreciation	193.25	-	-
Interest Paid	14.73	15.17	8.87
Cash Received from Operations before Changes in Operating Assets and Liabilities	(3.21)	148.26	288.37
Decreases (Increases) in Operating Assets			
Trade Accounts Receivable – General Accounts Receivable	(25.68)	18.78	131.97
Trade Accounts Receivable – Related Companies	(1.15)	1.13	(0.34)
Other Accounts Receivable – General Accounts Receivable	-	(1.14)	0.20
Other Accounts Receivable - Subsidiaries	(0.94)	1.19	(0.05)
Inventory	61.39	(31.48)	(16.33)
Value Added Tax Pending Recall	(9.46)	(12.52)	3.14
Expenses Paid in Advance	0.69	(0.13)	(3.88)
Other Current Assets	2.32	(2.75)	(0.07)
Other Non-Current Assets	(1.18)	2.91	(5.52)
Increases (Decreases) in Operating Liabilities			
Trade Accounts Payable	(67.48)	55.40	(55.24)
Other Accounts Payable			
- General Traders	5.29	(0.52)	(3.94)
- Affiliated Companies	(0.03)	(0.01)	0.01
Unpaid Expenses	8.03	(0.37)	(2.18)
Security Deposit for Goods Received	7.33	1.84	(7.31)
Other Current Liabilities	1.70	0.80	(0.15)
Liabilities Paid Based on Employee Benefit Obligations	-	-	-
Cash from Operating Capacity	(22.37)	181.39	328.68
Tax Payments	(3.22)	(3.19)	(8.35)
Interest Payments	(14.11)	(14.82)	(5.50)
Income Tax Refund	-	1.31	-
Net Cash Obtained (Spent) from Operating Activities	(39.70)	164.69	314.83

(Unit Million Baht)	2017 (Consolidated)	2018 (Consolidated)	2019 (Consolidated)
Cash Flow from Investment Activities			
Decreases (Increases) to Bank Deposits with Limited Use	-	-	(0.29)
Decreases (Increases) to Temporary Investments	(146.65)	(83.86)	(44.64)
Increases in Short-Term Loans – Joint Ventures	(0.87)	3.87	3.00
Cash Spent to Purchase Investments in Indirect Subsidiaries	(528.33)	-	-
Increases in Investments in Joint Ventures	-	-	-
Increases in Investments in Indirect Joint Ventures	(207.32)	(6.00)	-
Collectible Security Deposit for Investment Project Feasibility Study	81.11	-	-
Cash Received from Sale of Indirect Joint Ventures	-	195.32	-
Cash Received from Asset Distribution	3.53	3.12	3.57
Cash Received from tangible Asset Distribution	-	-	0.06
Payments to Purchase Other Permanent Assets	(56.61)	(69.62)	(44.58)
Computer Program Purchases	(0.55)	(0.53)	(2.09)
Net Cash Earned (Spent) from Investment Activities	(855.69)	42.30	(84.97)
Increases (Decreases) in Overdraft Accounts and Short-Term Loans from Financial Institutes)	15.06	(118.47)	(125.04)
Long-term Loans from Banks	-	15.04	-
Repayment of Long-term Loans from Banks	(15.31)	(71.74)	(75.24)
Repayment of Liabilities Under Lease/Purchase Contracts	(4.70)	(3.69)	(2.62)
Cash Received from Shares Issued to Raise Capital	900.93	-	-
Subsidiaries' Payment for Shares Issued to Raise Capital Outside Control	-	-	-
Cash Received from Using Rights on Warrants	1.76	0.04	-
Cash Dividend Payout	(8.10)	-	-
Net Cash Earned (Spent) from Financing Activities	889.63	(178.82)	(202.90)
Difference from Converting Financial Statement from Subsidiaries in Foreign Currency	(1.90)	(0.37)	(1.52)
Increases (Decreases) in Cash and Cash Equivalents – Net	(7.66)	27.80	25.44
Cash and Cash Equivalents as of 1 January	98.65	90.99	118.79
Cash and Cash Equivalents as of 31 December	90.99	118.79	144.23

3 Table Summarizing Significant Financial Ratios

Description		2017 (Consolidated)	2018 (Consolidated)	2019 (Consolidated)
Liquidity Ratios				
Liquidity Ratio	(Times)	1.90	2.42	5.17
Quick Ratio	(Times)	1.53	1.91	3.94
Operating Cash Flow to Current Liabilities	(Times)	(0.08)	0.35	0.98
Receivable Turnover Ratio	(Times)	3.22	3.23	4.36
Average Collection Period	(Days)	113.47	113.02	83.81
Inventory Turnover	(Times)	3.99	4.29	3.06
Average Holding Period	(Days)	91.41	85.17	119.32
Payable Turnover	(Times)	7.78	8.12	6.32
Payment Period	(Days)	46.94	44.97	57.75
Cash Cycle	(Days)	157.94	153.21	145.38
Profitability Ratios				
Gross Profit Margin(%)	(%)	15.61	21.95	36.25
Operating Profit Margin	(%)	(27.43)	3.66	22.55
Other Profit Margin	(%)	(1.45)	0.52	1.22
Cash to Profitability Margin	(%)	16.06	469.73	158.68
Net Profit Margin(%)	(%)	(27.03)	(0.01)	20.12
Return on Equity	(%)	(22.48)	(0.01)	12.88
Operating Efficiency Ratios				
Returns from Assets	(%)	(15.18)	(0.01)	10.51
Fixed Asset Turnover	(%)	(38.94)	10.68	40.40
Asset Turnover	(Times)	0.56	0.49	0.52
Financial Policy Analysis Ratios				
Debt to Equity Ratio	(Times)	0.41	0.33	0.13
Interest Coverage Ratio	(Times)	(16.18)	7.24	33.22
Obligation Coverage Ratio	(Times)	(0.45)	1.11	1.74
Dividend Payout Ratio	(%)	(3.28)	-	25.79

Analysis and Explanations of the Management

1 Past Performance Overview

In the energy business, the Company expanded investments to the energy business via a subsidiary, QTC Global Power Co., Ltd. In 2017, QTC Global Power Co., Ltd. purchased shares from Green Earth Power (Thailand) Co., Ltd. at an investment ratio of 15 percent to invest in a solar power plant in Myanmar in the process of development. Furthermore, the Company purchased all shares in L Solar 1 Co., Ltd. to invest in the 8-Megawatt Solar Power Plant Project in Kabinburi, Prachinburi, which commenced operations to generate and distribute electricity at full capacity.

The transformer manufacturing and distribution business is a business related to electricity generation and consumption needs because transformers are used to adjust voltages from production sites lower to the level of power users' needs such as industrial factories, residential homes and high-rise buildings, etc. Therefore, the business's trends are in the same direction as electricity needs, which are continually rising, causing EGAT to have duties and responsibilities related to all of Thailand's electricity generation and transmission systems including the Metropolitan Electricity Authority (MEA) and the Provincial Electricity Authority (PEA), which are responsible for distributing electricity to power users, modifying and expanding the power distribution system to be consistent with Thailand's electricity generation development plan, causing transformer needs to increase.

On 31 January 2018, QTC Global Power Co., Ltd. sold investments in Green Power Energy (Thailand) Co., Ltd. and received 195.32 million baht from distribution of investments in indirect joint ventures. The relationship was considered to be over as of 31 March 2018.

In 2018 and 2017, the Company's transformer sales were 786.70 million baht and 839.38 million baht, respectively. Transformer sale trends rise in 2019 from more investment in renewable energy projects, particularly solar energy. In 2018, the Company's transformer sales dropped to 786.70 million baht, a reduction of 6.28 percent from 2017 because the government sector and government enterprises delayed investments in projects. However, in the meantime, transformer sales in the private sector and the export sector grew from 2017 by 9.19 percent because economic growth in other regions of sale representatives' countries increased foreign sales and exports. Throughout the past, the price of vital raw materials such as silicon, copper foil and copper wire used in insulation for low-voltage coils fluctuated significantly. Nevertheless, with the executive team's experience of over 20 years in the transformer industry and the Company's selection of modern and efficient machinery and manufacturing technology, the Company's performance have always been profitable. Moreover, the Company recognizes the importance of implementing enterprise resources planning (ERP) in management of all sectors of the Company whether if it was production, procurement, sales, accounting and finance including inventory management as an interrelated system capable of fast data link in real-time, resulting in systematic integration and more efficient outcomes.

In 2019, the Company earned income from transformers and transformer repair and maintenance services, including electricity distribution at a total of 965.17 million baht, or a growth of only 0.74 percent from 2018. In the meantime, gross profit in 2019 amounted to 349.92 million baht, an increase from 2018 by 66.40 percent due to effective production and material procurement cost control management continuing from 2018. In addition, raw material costs declined due to the strengthening of the Thai baht currency, causing raw material prices to be lower.

In 2019, the Company's net profit from operations amounted to 198.40 million baht. In 2018, the Company had a loss of 0.12 million baht resulting from modifications to strategic plans since 2018. In 2019, the Company specified strategic plans in every area whether if it was financial strategies, marketing strategies or management strategies, giving the Company capacity to profit and manage finances to create liquidity. Moreover, the Company modified work processes to reduce errors that occurred in the past.

Because the Company places importance on the quality of the transformers it manufactures, the Company's transformer products are accredited for meeting the standards of various institutes such as TIS 384-2543 from the Thai Industrial Standards Institute, Ministry of Industry, ISO 9001:2000 standards for distribution transformer design, manufacturing and maintenance. In addition, the Company received a certificate for test laboratory capabilities meeting TIS 17025-2548 standards (ISO/IEC 17025:2005). Furthermore, the Company is able to manufacture transformers to meet international quality standards, a proof of international-level quality and customer acceptance.

(a) Income

The Company's total income was 914.82 million baht in 2017 and 978.34 million baht in 2018 and 986.05 million baht in 2019, respectively. Income in 2019 was divided into income from transformer sales at 780.35 million baht, income from electricity sales at 148.69 million baht, service income at 28.01 million baht and other income at 29 million baht. Information on transformer sales income can be summarized as follows:

Transformer Sales income

Customer Type	2017			2018			2019		
	Million Baht	Ratio (%)	Growth Rate (%)	Million Baht	Ratio (%)	Growth Rate (%)	Million Baht	Ratio (%)	Growth Rate (%)
Government Agencies and State Enterprises	285.21	33.98	216.79	181.59	23.08	(36.33)	271.52	34.79	49.52
Sales Representatives	213.73	25.46	120.72	181.83	23.11	(14.92)	116.27	14.90	(36.06)
Private	340.44	40.56	4.36	423.28	53.81	24.33	392.56	50.31	(7.26)
Total Sales Income	839.38	100.00	63.59	786.70	100.00	(6.28)	780.35	100.00	(0.81)

In 2017, the Company's sales income was 839.38 million baht, an increase from 2016 by 63.59 percent. Income from transformer sales to government agencies, state enterprises and private customers increased from 416.26 million baht in 2016 to 625.66 million baht in 2017, an increase by 33.47 percent. This was caused by income from government agencies and state enterprises which increased investments from the previous year. Income from sales representatives increased from 96.83 million baht in 2016 to 213.73 million baht in 2017, an increase of 25.46 percent as a result from increases in sales from sale representatives abroad in line with economic growth in the region of sale representatives' countries.

In 2018, the Company's sales income was 786.70 million baht, a reduction from 2017 by 6.28 percent. Income from transformer sales to government agencies and state enterprises dropped from 285.21 million baht in 2017 to 181.59 million baht in 2018, a reduction by 36.33 percent. This was caused by income from government agencies and state enterprises with slowing investment in projects. Income from transformer sales in the private sector and the export sector increased from 554.17 million baht in 2017 to 605.11 million baht in 2018, an increase of 9.19 percent as a result from increases in domestic and foreign sales in line with domestic and foreign economic growth.

In 2019, the Company's income from transformer sales amounted to 780.35 million baht, a reduction from 2018 by 0.81 percent. Income from transformer sales to government agencies and government enterprises rose from 181.59 million baht in 2018 to 271.52 million baht in 2019 or a reduction of 49.52 percent. This was a result from growth in policies of government agencies and enterprises to invest in infrastructure. Income from transformer sales in the private sector and the domestic and foreign export sector declined from 605.11 million baht in 2018 to 508.83 million baht in 2019 or a reduction of 15.91 percent. This was a result from control of transformer sales to domestic private sector customers with a greater emphasis on customers' ability to repay debt than sales due to the country's economic recession.

Service Income

The Company's service income in 2017 – 2019 was at 19.42 million baht and 20.76 million baht, respectively. Service income can be divided into: (1) income from transformer repairs, (2) income from providing transformer checks and maintenance services, (3) transportation income and (4) income from allowing transformer leases and other. If service income in 2019 is considered, service income in 2019 consists of income from transformer repairs at 9.17 million baht or 32.74 percent of service income, income from providing transformer checks and maintenance services at 15.34 million baht or a ratio of 54.77 percent of service income, transportation income at 0.31 million baht or a ratio of 1.11 percent of service income, income from allowing transformer leases at 0.61 million baht or a ratio of 2.18 percent of service income and income from other services at 2.58 million baht or a ratio of 9.21 percent of service income.

Other Income

The Company's other income consists of income from selling scraps, profit from exchange rates, interest received, returns from short-term investments, etc. In 2017 – 2019, the Company had other income at 13.28 million baht, 20.29 million baht and 20.88 million baht respectively. In 2019, other income consisted of income from selling scraps at 6.27 million baht, income from short-term investments at 4.25 million baht, profit from foreign currency exchange rates at 2.38 million baht, profit from selling permanent assets at 2.18 million baht and other income at 5.53 million baht.

(b) Costs and Expenses

The Company's main expenses consist of sales and service costs, sales and management expenses and paid interest. In 2017 – 2019, the Company's total expenses amounted to 1,167.94 million baht, 955.79 million baht and 777.30 million baht, respectively, according to the following information:

Sales and Service Costs and Gross Profit

The Company's sales and service costs are the Company's main expenses. The Company's sales and service expenses were 760.81 million baht in 2017, 747.76 million baht in 2018 and 615.25 million baht in 2019 or 65.14 percent, 78.23 percent and 78.11 percent of total expenses, respectively.

If sales and service cost is compared with sales and service income, the Company has the aforementioned ratios at 84.39 percent, 78.05 percent and 63.74 percent of sales and service income, respectively, or a gross profit of 15.61 percent, 21.95 percent and 36.25 percent, respectively. The following factors influence the Company's gross profit as follows:

1. With regard to customer mix in each year, the Company's customers can be divided into three following types consisting of: (1) government agencies and state enterprises, (2) sale representatives and (3) private customers. Transformer distribution to all three types of customers has different gross profit rates. In 2019, government agency and state enterprise customers had the highest gross profit margins due to large purchase orders, causing cost per unit to be lower than transformer manufacturing for other customers, followed by foreign sale representative customers.

In 2018, transformer sale ratios to government agencies and state enterprises dropped from 33.98 percent in 2017 to 23.08 percent in 2018 due to a slowdown in government sector project investments. However, at the same time, private sector and export transformer sales increased from 40.56 percent in 2017 to 53.81 percent in 2018, causing gross profit margins to increase from 15.61 percent in 2017 to 21.95 percent in 2018.

In 2019, the percentage of transformer sales to government agencies and government enterprises rose from 23.08 percent in 2018 to 34.79 percent in 2019 due to growth in policies of government agencies and government enterprises to invest in infrastructure. At the same time, however, domestic and foreign transformer sales to the private sector declined from 53.81 percent in 2018 to 50.31 percent in 2019, causing the gross profit ratio to increase from 21.95 percent in 2018 to 36.25 percent in 2019.

2. Raw material prices, particularly for main raw materials such as silicon, coated round wires and copper foils which have few producers, adjust according to supply and demand in the global market. Therefore, raw material prices fluctuate significantly. In 2017, silicon prices decreased continually by 10 – 25 percent. Meanwhile, the price of coated round wire and copper foil rose in 2018 at a rate of 12 – 19 percent. In 2018, silicon prices rose from 2017 at the rate of 2.16 percent, coated round wire prices rose from 2017 by 6.61 percent and copper foil prices increased from 2017 by 1.40 percent. In 2019, raw material costs declined due to the strengthening of the Thai baht currency, causing raw material prices to be lower, the number of used raw material and waste material in 2019 is 418.76 million baht, decreased from year 2018 which had 550.51 million baht, or reduction of 23.93 percent.

Sales and Management Expenses

The Company's sales and management expenses were 394.72 million baht in 2017, 193.89 million baht in 2018 and 153.18 million baht in 2019 or 42.89 percent, 19.82 percent and 15.53 percent of total income, respectively.

In 2017, the Company's sales and management expenses were 392.40 million baht, an increase from 2016 by 206.70 percent. This is because the Company's management expenses increased from normal operating expenses such as legal consultation expenses and employee expenses, etc. Furthermore, in 2017, the Company perceived allowance for value depreciation from business purchases at 193.25 million baht.

In 2018, the Company's sales and management expenses were 193.89 million baht, a reduction from 2017 by 50.88 percent due to the Company's control to lower operating expenses including consultation expenses. Furthermore, in 2018, the Company reversed the allowance for doubtful accounts of loans to subsidiaries at 47.25 million baht.

For 2019, the company has income from selling and management at 153.18 million baht, decreased from 2018 at 21 percent because the company could control the expense from selling and other management, also to specify the credit policy causing trade accounts receivable's suspected liability may loss in 2019 reduced and there is no reserved advance of devalue of investments in subsidiaries in year 2019.

Paid Interest

In 2017 – 2019, the Company paid interest at 14.73 million baht, 15.17 million baht and 8.87 million baht, respectively. Most of the Company's interest payment burdens were created by B/E, P/N and LC/TR balance spending, which were current loan balances in ordering raw material purchases from in the country and overseas. Furthermore, the Company has long-term loans from a commercial bank to invest in machinery to enhance production efficiency. This created interest burdens from the aforementioned long-term loans.

(c) Net Profit

Based on the aforementioned performance, in 2017 – 2019, the Company's net loss was 247.25 million baht, 0.12 million baht and net profit 198.40 million baht, respectively, with net profit (net loss) at (27.03) percent, (0.01) percent, and 20.12 percent, respectively.

If net profit in the past year is considered, the Company's net profit can be seen to increase or drop according to the Company's income including income ratios from sale of goods. For example, sales to customers with high gross profit ratios were higher because the Company's sales and management expenses such as expenses related to executives and employees and depreciation, etc., were at 37 – 40 percent and did not fluctuate with income.

In 2017, the Company had a net loss of 247.25 million baht, an increase from 2016 by 206.80 percent because the Company perceived allowance for depreciation of value from business purchases at 193.25 million baht.

In 2018, the Company had a net loss of 0.12 million baht, a reduction from 2017 by 99.95 percent. This was because the Company controlled production, selling prices, sales and management expenses including the reversal of allowance for doubtful accounts of loans for subsidiaries at 47.25 million baht.

In 2019, the Company had a net profit of 198.40 million baht, an increase from 2018 by 198.52 million baht. This was a result of the Company's production control, sales price control, loan offers, information system development, human resource development and control of expenditures in sales and operations by giving primary consideration to economic benefits.

Return on Equity

When return on equity is considered, return on equity can be seen to have adjusted in the same direction as net profit increases. The Company's return on equity was (22.48) percent for 2017, (0.01) percent from 2018 and 12.88 percent from 2019. The Company's return on equity increased when compared to 2018. Because the Company's performance in 2019 had higher sales income, a higher gross profit ratio and a higher net profit ratio, the Company's results and success came from implementing strategic plans in 2019. The Company specified strategic plans in every area whether if it was financial strategies, marketing strategies or management strategies, giving the Company capacity to profit and manage finances to create liquidity. Moreover, the Company modified work processes to reduce errors that occurred in the past.

2 Financial Status

(a) Assets

At the end of 2017 – 2018, the Company had total assets at 2,037.27 million baht, 1,918.99 million baht and 1,856.37 million baht, respectively. The Company's significant assets consist of land, buildings and equipment, trade accounts receivable, inventory and temporary investments. In 2019, ratios of the aforementioned significant assets to total assets were at 81.13 percent. Significant assets of the Company can be summarized as follows:

Trade Accounts Receivable

The Company's separate statement showed trade accounts receivable before allowance for doubtful accounts at 281.93 million baht at the end of 2017, 260.39 million baht at the end of 2018 and 128.01 million baht at the end of 2019 or ratios of 13.95 percent, 14.36 percent and 7.34 percent of total assets, respectively. At the end of 2018, At the end of 2019, trade accounts receivable declined from 2018 by as much as 50.84 percent because the Company specified a policy to manage and follow-up on overdue debt in 2019. In addition, the Company issued loan policies to prevent risk of customers not paying on schedule. This enhanced the Company's collection efficiency. In the past, the Company's average collection periods were 113.47 days in 2017, 113.02 days in 2018 and 83.81 days in 2019. The average collection period became shorter in 2019.

Outstanding Period	As of 31 DEC 2017		As of 31 DEC 2018		As of 31 DEC 2019	
	Million Baht	%	Million Baht	%	Million Baht	%
Not Due for Payment	126.80	44.97	157.88	60.63	74.67	58.33
Unpaid and Late:						
No More Than 3 Months	81.79	29.01	59.44	22.83	9.80	7.66
3 – 6 Months	28.08	9.96	4.60	1.77	-	-
6 – 12 Months	20.39	7.23	7.49	2.88	11.72	9.15
More Than 12 Months	24.89	8.83	30.98	11.89	31.82	24.86
Trade Accounts Receivable Before Deducting Allowance for Doubtful Accounts	281.93	100	260.39	100	128.01	100
Deduct: Allowance for Doubtful Accounts	(23.37)		(30.65)		(32.07)	
Trade Accounts Receivable – Net	258.56		229.74		95.94	

Based on the aforementioned table, the Company's accounts receivable not due for payment at the end of 2017 – 2019 can be seen to be 44.97 percent, 60.63 percent and 58.33 percent of trade accounts receivable before deducting allowance for doubtful accounts, respectively. In the meantime, the Company's accounts receivable who have not paid were at ratios of 55.03 percent, 39.37 percent and 41.67 percent of trade accounts receivable before deducting allowance for doubtful account, respectively. Most of these trade accounts were trade accounts who had not paid for no more than three months. This was because the Company was unable to collect when waiting for customer bills and payments. In addition, most of the Company's private customers were contractors of electricity systems who purchased the Company's transformers to install in various projects. Therefore, payment for the cost of goods to the Company was dependent on the customer's ability to collect from project owners, which may take a long time. Nevertheless, the Company was able to collect from the aforementioned accounts receivable.

At the end of 2017 – 2019, the Company's ratio of trade accounts who have not paid for more than one year was at 8.83 percent, 11.89 percent and 24.86 percent of trade accounts receivable before deducting allowance for doubtful accounts, respectively. In 2019, accounts receivable who have not paid for more than one year increased from 2018 by 2.71 percent. The Company considered actions to monitor the aforementioned debts including legal actions or negotiations for debtors to repay debts to the Company by making written agreements to compound debt in the case of debtors who can be contacted by basing consideration on what is deemed fitting and the needs of each debtor. The management places importance on monitoring progress and operations of related parties closely in monthly meetings. Thus, the Company received payments from accounts receivable with allowance for doubtful accounts at 4.44 in 2017, 5.91 in 2018 and 1.42 in 2019. Regarding the policy to set allowance for doubtful accounts in 2017 – 2018, the Company set allowance for doubtful accounts unpaid for more than one year at the full amount. At the end of 2019, the Company set allowance for doubtful accounts at 32.07 million baht.

Inventory

At the end of 2017 – 2019, the Company's inventory before deducting allowance for deterioration and depreciation of goods dropped by 155.97 million baht, 187.45 million baht and 203.78 million baht, respectively. The highest component of inventory in 2017 – 2018 was raw materials at 45.67 percent and 48.75 percent of total inventory, respectively. In 2019, the highest amount of inventory was finished goods at 48.41 percent of total inventory. This was because:

- The main raw materials used in manufacturing transformers such as silicon and copper foil are goods with few producers that require reservations in advance to purchase from producers or suppliers in order to have sufficient raw materials for the amount needed for manufacturing and to reduce risks from fluctuations in raw material prices.
- Ordinarily, to manufacture a set of transformers, raw materials of different sizes are needed. Different draw material sizes are used at different amounts while raw material purchase orders have a minimum order, causing an amount of raw materials to be left over.
- Because some raw materials such as copper foil and coated round wire, etc., are rolled, copper or wire scraps are leftover when used. The Company will consider selling the aforementioned raw material scraps as appropriate. While scraps are not amortized, the Company will continue to record the aforementioned copper or wire scraps as inventory raw materials.

	As of 31 DEC 2017		As of 31 DEC 2018		As of 31 DEC 2019	
	Million Baht	%	Million Baht	%	Million Baht	%
Raw Materials	70.90	45.46	77.32	41.25	82.08	40.28
Work in Progress	10.70	6.86	18.72	9.98	17.72	8.69
Finished Goods	71.28	45.70	91.38	48.75	98.63	48.40
Goods in Transit	3.09	1.98	0.03	0.02	5.35	2.63
Total Inventory	155.97	100	187.45	100	203.78	100
Less: Reserve for Degraded Goods and Allowance for Lower Value of Goods	(4.82)		(12.19)		(5.28)	
Inventory – Net	151.15		175.26		198.50	

The ratio of finished goods to inventory was 45.70 percent at the end of 2017, 48.75 percent at the end of 2018 and 48.40 percent at the end of 2019 while holding periods were at 89.55 days, 83.82 days and 119.32 days, respectively. The finished goods consisted of the following: (1) manufactured transformers pending delivery to customers. Because the Company delivers goods to customers at sites specified by customers in most transformer sales, therefore, customers need to prepare facilities to support transformers from the Company. On some occasions, customers will reschedule transformer deliveries, causing the Company to record the aforementioned transformers as finished goods because the Company's accounting policy allows goods to be recorded as income only when transformers have been delivered to customers; (2) transformers manufactured and reserved for sale. In 2017 and 2018, the Company's sales grew by leaps and bounds. Therefore, the Company placed greater importance on manufacturing finished transformers for sale since 2019. These transformers are standard transformers with regular purchase orders, allowing the Company to make production plans more effectively. Thus, the Company has a number of finished transformers in inventory.

In 2019, the Company's inventory before deducting allowances for degradation and depreciation rose to 203.78 million baht from the end of 2018. Inventory before deducting the aforementioned consisted of 82.08 million baht in raw materials, an increase of 6.16 percent from the end of 2018, ongoing work at 17.72 million baht, an decrease of 5.34 percent from the end of 2018 and finished goods at 98.64 million baht, an increase of 7.94 percent from the end of 2018. This was because the Company increased transformer manufacturing in the fourth quarter of 2019 to meet

customer delivery schedules at the end of the year and scheduled deliveries in early 2020, causing inventory to be high when compared to the previous year and 2019.

Land, Buildings and Equipment

The Company had net land, buildings and equipment at 688.96 million baht at the end of 2017, 689.30 million baht at the end of 2018 and 666.01 million baht at the end of 2019 or a ratio to total assets of 33.82, 35.92 and 35.88, respectively. In 2015 and 2016, the Company's machinery and factory equipment increased by 43.38 million baht and 1.43 million baht from investment to purchase machinery and factory equipment such as steel cutting and folding machines to enhance production efficiency.

In 2017, the Company's net land, buildings and equipment increased by 381.70 million baht as a result of investment in a solar energy project, which was an indirect subsidiary, and the Company invested to partially modify machines. The Company continually invested in machinery and equipment to enhance production efficiency and capacity from 2012 to the present day.

In 2018, the Company's net land, buildings and equipment increased by only 0.34 million baht due to no investment in any project.

In 2019, the Company's net land, buildings and equipment dropped by 23.29 million baht due to sale of vehicle assets and a change in policy to rent vehicles.

(b) Liquidity

Cash Flow

In 2017, the Company's net cash flow from operations was 39.70 million baht, a reduction from 2016. In 2017, the Company's losses from performance were as high as 253.13 million baht because allowance for depreciation of value was as high as 193.25 million baht. Inventory increased from 57.61 million baht in 2016 to 61.39 million baht in 2017 and trade accounts receivable dropped from 227.33 million baht in 2016 to 25.68 million baht in 2017. The Company's cash flow spent in investment activities increased to 855.67 million baht from investing 735.63 million baht in energy businesses through subsidiaries, investments in machinery and factory equipment permanent assets at 56.61 million baht and acceptance of 81 million baht in security deposits to study in energy investment project. The Company's net cash flow gained from financing activities was 889.63 million baht. The Company's short-term loans increased by 15.06 million baht, cash gained from capital increases were at 900.93 million baht and dividend payout to shareholders was at 15.06 million baht. For the aforementioned reasons, cash and cash equivalents dropped by 7.66 million baht in 2017.

In 2018, the Company had net cash flow from operations at 164.69 million baht, an increase from 2017, because the Company had a loss of 0.12 million baht from performance in 2018, a reduction from 2017. The Company's cash flow spent in investment activities increased to 42.30 million baht and the Company's net cash flow from financing activities was 178.82 million baht, causing cash flow to increase by 27.80 million baht.

In 2019, the Company's net cash flow from operations amounted to 314.83 million baht, an increase from 2018 due to effective management of trade accounts receivable, resulting in financial liquidity. The Company's net cash flow spent in investment activities dropped to 84.97 million baht and the Company's net cash flow from financing activities declined to 202.90 million baht, causing the Company's cash flow to increase by 25.44 million baht.

(Unit: Million Baht)	2017	2018	2019
Net Cash Earned (Spent) from Operating Activities	(39.70)	164.69	314.83
Net Cash (Spent) from Investment Activities	(855.69)	42.30	(84.97)
Net Cash Earned (Spent) from Financing Activities	889.63	(178.82)	(202.90)
Increases (Decreases) in Net Cash and Cash Equivalents	(7.66)	27.80	25.44

Liquidity Ratio

At the end of 2017 – 2019, the Company's liquidity ratios were 1.90 times, 2.42 times and 5.17 times, respectively. In addition, the Company's quick ratios were 1.53 times, 1.91 times and 3.94 times, respectively. The significant difference of the quick ratio from the liquidity ratio was because the Company had high inventory to current assets ratios at 16.16 percent, 16.45 percent and 19.21 percent, respectively.

The Company's cash cycle was 1577.94 days in 2017, 153.21 days in 2018 and 145.38 days in 2019. The Company's average collection period in 2017 – 2019 is at 113.47 days, 113.02 days and 83.81 days, respectively. In 2017 and 2018, the Company's collection periods were at 113.47 days and 113.02 days, respectively, a reduction from previous years. The Company monitored closely to ensure collection is more efficient.

In 2019, the Company's collection period became shorter than 2018. In 2019, the Company's collection period was 83.81 days while the Company's collection period in 2018 was 113.02 days. This resulted from strict implementation of loan policies to control for customers to pay on schedule and assess customers' financial capacity before delivery. The Company emphasized offering loans with shorter periods or taking payments before delivery of goods.

		2017	2018	2019
Liquidity Ratio	(Times)	1.90	2.42	5.17
Quick Ratio	(Times)	1.53	1.91	3.94
Average Collection Period	(Days)	113.47	113.02	83.81
Average Holding Period	(Days)	91.41	85.17	119.32
Payment Period	(Days)	47.19	44.97	57.75
Cash Cycle	(Days)	157.94	153.21	145.38

(c) Capital Sources

Liabilities

At the end of 2017 – 2019, the Company's total liabilities amounted to 595.18 million baht, 477.34 million baht and 217.55 million baht, respectively. Total liabilities can be seen to be 54.42 percent less than the previous year. When calculated to be proportionate to total liabilities, total liabilities amounted to 97.33 percent at the end of 2017, 92.95 percent at the end of 2018 and 91.88 percent at the end of 2019. Significant current liabilities consisted of short-term loans from financial institutes at 35.41 percent of total liabilities at the end of 2019. Most of the short-term loans were promissory notes (P/N) and LC/TR used to order purchases of raw materials domestically and abroad. Furthermore, current liabilities included trade accounts payable at 20.14 percent of total liabilities at the end of 2019.

Shareholder Equity

At the end of 2017, the Company had shareholders' equity equal to 1,442.09 million baht, an increase from the end of 2016 by 684.42 million baht, which is an increase to capital increases during the year at 902.68 million baht. This is a reduction from loss in performance at 247.25 million baht and the Company paid out dividends to shareholders at 8.10 million baht.

At the end of 2018, the Company has shareholders' equity at 1,441.64 million baht, a reduction from the end of 2017 by 0.45 million baht, which a reduction from losses in performance at 0.12 million baht.

At the end of 2019, the Company's shareholders' equity amounted to 1,638.83 million baht, an increase of 197.19 million baht from the end of 2018. This increase was a result from a net profit of 198.40 million baht in 2019.

Capital Structure Suitability

The Company has a debt to equity ratio of 0.41times in 2017, 0.33 times in 2018 and 0.33 times in 2018. In 2017, the debt to equity ratio dropped because the Company increased registered capital by 650 million baht in the fourth quarter. This capital increase was specific for use to invest in energy projects.

In 2018, debt to equity ratio dropped from 2017 because raw material inventory was maintained at levels consistent with manufacturing capacity and no investments were made in any project.

In 2019, the debt to equity declined from 2018 because of trade accounts receivable and inventory management during the year, causing cash flow to be accepted continually. This created liquidity and the result was shorter loans due to available cash flows for paying off short-term loans.

14.3 Factors and Major Influences with Potential Impact on Future Performance and Financial Status

Concerning impact from the uncertainty of bidding results, because customers are a group in the government sector and state enterprises that generates and distributes electricity such as the Metropolitan Electricity Authority and the Provincial Electricity Authority, transformers are procured by bidding, which may increase uncertainty for the Company's sales income because the Company's sales income is dependent on the Company's bidding capabilities. Furthermore, the Company's sales income is mainly dependent on the economy and budget of each agency, which has effects on the time when the aforementioned agencies will open biddings. In the past, the Company's income from transformer sales to this group of customers amounted to 20 – 30 percent of total sales income, which is a high ratio. Nevertheless, the Company and the Company's executives conducted business over a long time, causing the Company to have good relationships with MEA and PEA and the Company gained trust in the quality of transformers. Furthermore, the Company is one of only a few manufacturers capable of manufacturing high quality transformers to meet the needs of both agencies. Therefore, executives believe the Company has sufficient capacity to sell transformers to both MEAN and PEA continually in the long-term. Moreover, the Company makes efforts to expand the market to foreign customers more by appointing more foreign sales representative in every year.

14.4 Certified Public Account Fees

In the fiscal year ending 31 December 2019, the Company paid audit fees to the Company's Certified Public Accountant, Grant Thornton Co., Ltd., in the amount of 1,545,000.00 baht. Apart from the aforementioned fees, the Company has no other service fee to pay to the Certified Public Accountant, the Certified Public Accountant's auditing office and individuals or businesses related to the Certified Public Accountant or the Certified Public Accountant's auditing office.