



“We serve you all details you need”



## COMPANY PROFILE

**QTC** Energy Public Company Limited was established in July, 1996 by a group of professional engineers backed by long experience in this field more than 30 years. Our mission is to create a transformer manufacturer offering products that were second to none, and to ensure clients of greater benefit and added value.

**QTC** stands alone as Thailand's leader in the local manufacturing of transformers, using the latest technology and machines and other modernized facilities. Transformers manufactured by QTC are superior in quality, reliability and advanced technology. The company is operated and accredited from various independent international standard organizations such as ISO9001, ISO14001, OHSAS18001 and ISO / IEC17025.

**QTC** has initiated and devoted themselves to consistent and ongoing research and development to ensure the most advanced and superior quality products. QTC Transformers have passed stringent Short Circuit Withstand Tests conducted by CESI Italy and KEMA Netherland. This is why we call the company QTC - Quality Transformer Company.

### VISION

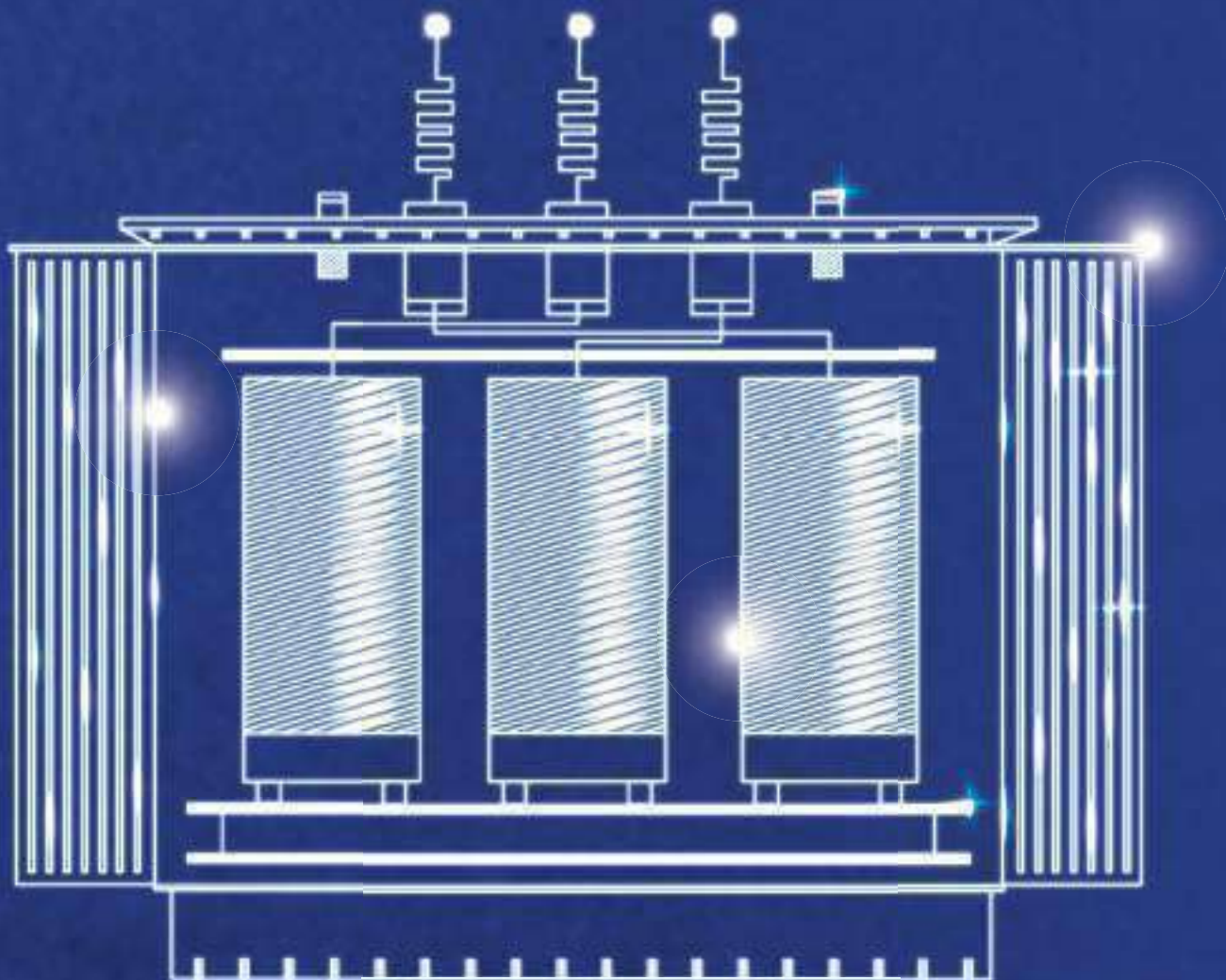
To be a technology provider with world-class standard in power industry along with social and environmental responsibilities and good governance

### 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 hard and soft skills
4. Operating in good governance along with corporate social responsibility
5. Building sustainable growth businesses in long-term to gain trust of all stakeholders

### MANUFACTURE & SERVICE EXCELLENCE

Based on our years of engineering experience, our manufacturing facilities have been designed to produce only products of highest quality. Each manufacturing process is closely monitored to reach international safety and operational standards. Experienced and well-trained manufacturing staff works cooperatively with our sales & service teams to guarantee fast and punctual delivery of every order.



## D - Dynamics

We are dynamic organization, and constant development in every detail is our guiding philosophy. It covers everything from the selection of premium raw materials, to implement top-quality technology, and to exact constant control over the standard of production. This has been the secret of our success. Above and beyond that, we are constantly researching and improving our products to meet the demands of world-class standards to satisfy our customers even further.

### Computerized design

Computer programs are used to calculate all transformer data and all parameters to prevent any electrical, mechanical, and thermal stresses that may arise during operation. QTC transformers can guarantee operational safety, reliability, and maintenance-free operation.



# PRODUCTS

## POWER TRANSFORMER

Power transformer is a transformer used to lower the electricity voltage transmitted from the electricity source that pass via the transmission line before transmitting the electric current to the distribution line for further transmission to users. It has capacity from 5,000-30,000 KVA and rated power maximum to 72 KV.

## OPEN TYPE WITH CONSERVATOR

Open type with conservator is an older type of transformer commonly used for a long time. It uses transformer oil as insulation and cooling as same as the hermitically sealed oil type distribution transformer. However, there is a conservator installed to support the expansion of transformer oil during use. The tube allows air to pass out. And at the end of the tube, it contains a silica gel capsule which is a substance to absorb moisture from the air before entering the transformer. Transformer oil type must be checked regularly every 6-12 months.



POWER TRANSFORMER  
UP TO 30 MVA



FREELY BREATHING  
(RADIATOR)



FREELY BREATHING  
(RADIATOR)



N<sub>2</sub> GAS SEALED



FREELY BREATHING  
(CORRUGATED)



OLTC TRANSFORMER

## HERMETICALLY SEALED OIL TYPE DISTRIBUTION TRANSFORMER

This type of transformer is a transformer that uses transformer oil as the electrical short circuit insulation in the transformer. The transformer oil is also used for cooling the inside coils to the outside of the transformer. The transformer tank is sealed hermetically to prevent air coming into and contact with the oil inside the transformer. Therefore, this type of transformer provides great ability to prevent moisture. As a result, the transformer oil will not easily deteriorate. It also helps maintain the insulation of transformer oil to last longer, and lengthen the duration and reduce the cost of the transformer maintenance as well. Generally, this type transformer will be installed outdoor.



## DRY TYPE TRANSFORMER

### DRY-TYPE CAST RESIN

This is a dry type transformer with high voltage coil produced by special cast resin process in order to withstand high voltage and has mechanical strength. It is intended to replace the oil type distribution transformer in the building area with ensured safety such as high-rise buildings, hospitals, etc.

### DRY-TYPE CLASS F&H

This is a dry type transformer used for converting low voltage system. Due to a low voltage, coil of this dry type transformer needs not to be casted with resin, but the high temperature dielectric simply is used for wrapping the coil, and then the wrapped coil is sprayed with a special paint to prevent humidity.



CSP-TYPE



GAS SEALED



DRY-TYPE CLASS F&H



AMORPHOUS TRANSFORMER



TRANSFORMER WITH CABLE BOX



PAD MOUNTED

## SPECIAL TRANSFORMER

Special Transformer is designed and produced according to customer requirements and applications, such as using as a ground of the transformer, using indoors with limited space, and using with underground wiring, etc.

# TRANSFORMER CORE



## MULTI-STEP LAP CORE

Multi-Step Lap Core is used in QTC transformer to minimize the no-load loss by as much as 15%, exciting current is diminished by 50% and noise level is decreased up to 5 dB to reduce noise pollution.



## STACKING TABLE

The core is stacked in the correct layout precisely and accurately on the stacking table. The core limb laminations are mitered at the points with the yoke. The limb and yoke have exactly the same cross-section in which it is spread out step by step, achieving a circular-like shape. An adequate number of core bandages make a uniform compression of the limb certain.



## FOIL WINDING MACHINE

To ensure high quality, safe and long life warranty, QTC employ modernized foil-winding machine to wind the low-voltage coils by using copper foil to produce low-voltage winding which is an excellent technique to reduce axial short circuit forces. Copper foil and insulation material are bonded with thermopox to enhance ability to withstand radial forces.



## HIGH VOLTAGE WINDING MACHINE

The latest improvement in the winding technology of QTC Transformer is long layer design to achieve uniform stress distribution along interlayer insulation. The winding is more homogenous and less sensitive to high frequency resonance due to lightning impulse overvoltage and the automatic winding machine is computer controlled. It can control tension of copper wire, winding layer insulation and winding sequence to prevent human error and retain similar quality for every coil.



## CORRUGATED FIN FOLDING MACHINE

Corrugated Fin Folding Machine, It is an automated machine for manufacturing of high quality corrugate fin suitable for corrugated tank.





## VACUUM DRYING AND FILLING PLANT

QTC operates Thailand's first and only electric low-frequency heating equipment. The uniform, modern and economical heating and drying process is performed by injection of low-frequency heating current direct to transformer winding under vacuum and then filling with high quality oil. A computerized controller ensures that QTC transformer has the highest quality insulation system.



MARKET STANDARD LOSSES

RATED POWER (kVA)	VOLTAGE SYSTEM 11 kV. 12 kV.									VOLTAGE SYSTEM 22kV. 24kV.									VOLTAGE SYSTEM 33 kV.									WATT LOSSES			% IMP AT 75 °C
	WEIGHT		DIMENSION (mm.)							WEIGHT		DIMENSION (mm.)							WEIGHT		DIMENSION (mm.)							NO-LOAD LOSSES			
	Total (kg)	Oil (kg)	a	b	h1	h2	e	f1	f2	Total (kg)	Oil (kg)	a	b	h1	h2	e	f1	f2	Total (kg)	Oil (kg)	a	b	h1	h2	e	f1	f2	12-24 kV	33 kV	LOAD LOSSES AT 75 °C	
50	425	130	940	640	1090	685	430	250	150	425	130	940	640	1090	685	430	280	150	460	160	990	670	1265	765	450	380	150	110	170	875	4
100	620	185	1060	730	1165	780	500	250	150	620	185	1060	730	1165	780	500	280	150	670	225	1105	720	1380	880	510	380	150	180	260	1450	4
160	850	225	1160	800	1160	775	580	250	150	850	225	1160	800	1160	775	580	280	150	880	270	1185	820	1400	900	600	380	150	260	370	2000	4
250	1060	290	1025	845	1260	875	630	250	180	1060	290	1025	845	1260	875	630	280	180	1150	345	1285	830	1455	970	650	380	150	360	520	2750	4
315	1500	350	1365	785	1340	1045	720	250	180	1620	385	1395	795	1430	1065	760	280	180	1830	470	1485	805	1575	1105	860	370	180	700	740	3900	4
400	1620	360	1365	765	1370	1075	740	250	180	1720	400	1415	805	1450	1085	760	280	180	2305	630	1595	865	1655	1185	960	370	180	850	900	4600	4
500	2070	470	1565	835	1350	1055	900	250	200	1700	390	1610	980	1470	1065	700	280	200	2310	610	1715	945	1545	1075	1020	370	200	1100	1150	6600	4
630	2310	470	1545	855	1455	1160	725	250	200	2200	495	1830	1080	1580	1175	760	280	200	2780	710	1745	955	1710	1240	900	370	200	1200	1250	8500	4
750	2300	540	1715	1020	1595	1255	770	250	230	2330	550	1780	1080	1650	1245	770	280	230	2550	715	1730	1000	1725	1315	840	370	230	1200	1250	12000	6
800	2380	545	1625	905	1505	1210	760	250	230	2510	630	1820	1090	1680	1275	800	280	230	2780	740	1875	1095	1700	1230	900	370	230	1300	1400	13500	6
1000	2940	660	1825	1035	1760	1240	860	250	230	3090	760	1865	1065	1665	1250	900	280	230	3500	900	1975	1115	1800	1280	1020	370	230	1600	1700	13000	6
1250	3610	790	1925	1115	1665	1320	900	250	230	3690	850	2025	1195	1735	1320	940	280	230	3920	1040	2065	1195	1940	1420	1020	370	230	1800	1900	16000	6
1500	3985	890	2065	1215	1805	1505	1050	250	230	4015	960	2095	1235	1905	1525	1070	280	230	4660	1230	2170	1270	2030	1510	1080	370	230	2100	2150	19000	6
2000	4270	1070	2165	1245	1805	1460	720	250	230	4615	1168	2225	1275	1890	1475	780	280	230	4840	1320	2280	1290	2030	1490	860	370	230	2600	2700	22700	6
2500	5250	1250	2285	1295	1900	1560	820	250	250	5460	1350	2315	1305	1975	1560	860	280	250	5900	1590	2425	1375	2125	1585	860	370	250	3200	3300	26800	6

Rev.1\_Aug2020

STANDARD ACCESSORIES

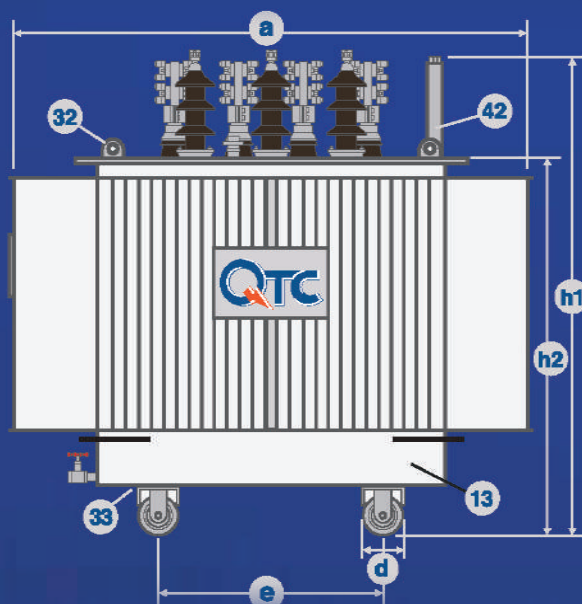
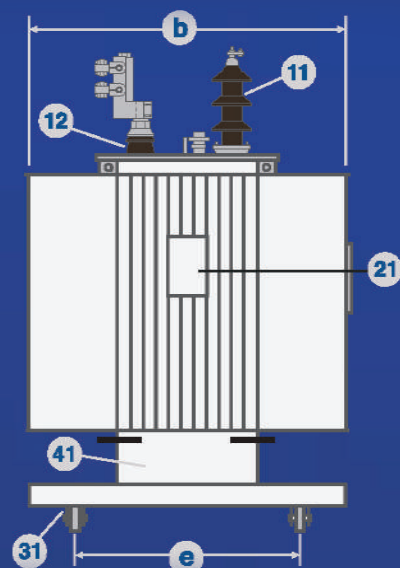
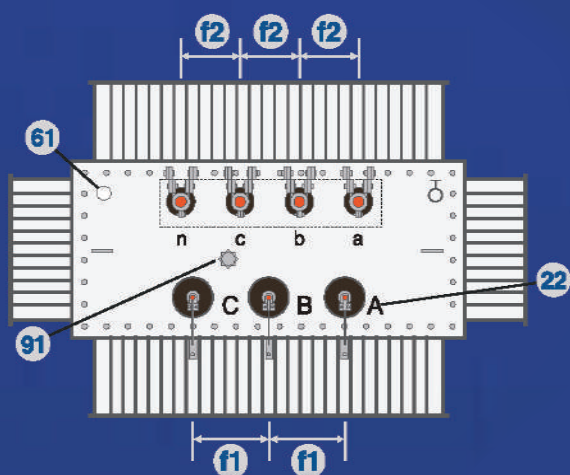
STANDARD ACCESSORIES	RATED POWER (KVA)													
	100		250		400		630		1000		1500		2500	
HV BUSHING DIN 42531	●	●	●	●	●	●	●	●	●	●	●	●	●	
LV BUSHING DIN 42530	●	●	●	●	●	●	●	●	●	●	●	●	●	
ARCING HORN	●	●	●	●	●	●	●	●	●	●	●	●	●	
LIFTING LUGS	●	●	●	●	●	●	●	●	●	●	●	●	●	
OFF-CIRCUIT TAP CHANGER	●	●	●	●	●	●	●	●	●	●	●	●	●	
LIFTING EYE	●	●	●	●	●	●	●	●	●	●	●	●	●	
EARTH CONNECTION BM 12 DIN 48088	●	●	●	●	●	●	●	●	●	●	●	●	●	
NAMEPLATE	●	●	●	●	●	●	●	●	●	●	●	●	●	
FILLING TUBE	●	●	●	●	●	●	●	●	●	●	●	●	●	
BIDIRECTIONAL ROLLER	●	●	●	●	●	●	●	●	●	●	●	●	●	
OIL DRAIN DEVICE	●	●	●	●	●	●	●	●	●	●	●	●	●	
OIL LEVEL INDICATOR	●	●	●	●	●	●	●	●	●	●	●	●	●	
THERMOMETER POCKET	●	●	●	●	●	●	●	●	●	●	●	●	●	
THERMOMETER INDICATOR	●	●	●	●	●	●	●	●	●	●	●	●	●	
THERMOMETER WITH CONTACTS	●	●	●	●	●	●	●	●	●	●	●	●	●	
TRANSFORMER PROTECTION RELAY	●	●	●	●	●	●	●	●	●	●	●	●	●	
WINDING TEMP RELAY	●	●	●	●	●	●	●	●	●	●	●	●	●	
CT	●	●	●	●	●	●	●	●	●	●	●	●	●	
CABLE BOX	●	●	●	●	●	●	●	●	●	●	●	●	●	

● STANDARD ACCESSORIES ● OPTIONAL

## TERMINAL ARRANGEMENT FOR CABLE CONDUCTOR

RATING POWER (KVA)	APPLICABLE TO ALUMINIUM AND COPPER CONDUCTORS		NUMBER OF CIRCUITS	
	DIAMETER RANGE (mm)	SIZE (mm) <sup>2</sup>		
315	11.4 - 17.6	95 - 185	4	
400	12.9 - 20.2	120 - 240	4	
500	12.9 - 20.2	120 - 240	4	
630	12.9 - 20.2	120 - 240	4	
800	15.9 - 25.6	185 - 400	4	6
1000	15.9 - 25.6	185 - 400	4	6
1250	15.9 - 25.6	185 - 400	4	6
1600	18.4 - 29.2	240 - 500	6	8
2000	18.4 - 29.2	240 - 500	6	8
2500	18.4 - 29.2	240 - 500	8	10

- ⑪ HV BUSHING ACC. TO DIN 42531
- ⑫ LV BUSHING ACC. TO DIN 42530
- ⑬ EARTH CONNECTION BM 12 DIN 48088
- ⑳ NAMEPLATE
- ㉔ TERMINAL MARKING PLATES
- ㉑ BI-DIRECTION ROLLER
- ㉒ LIFTING EYE
- ㉓ HUALING LUGS FOR BI-DIRECTION  
SHIFTING OF THE TRANSFORMER
- ㉔ OIL DRAIN VALE
- ㉕ FILLING TUBE
- ㉖ THERMOMETER POCKET
- ㉗ OFF-CIRCUIT TAP CHANGER





## E-ENVIRONMENT

We all need to be aware of the environment and the importance of reducing the use of energy, so we place a great deal of emphasis on product design and development to ensure safety for both our production workforce and our valued customers. Additionally, the technology we put into our operation saves energy and reduces pollution effectively. We also place great importance on the environmental friendliness of our factory and our office, as well as, the well-being of the community to which we belong, to ensure that everyone lives happily together.

### Corporate Social Responsibility (CSR) Policy

QTC Energy PLC is committed to operate under good corporate governance, and care for the environment. To become a sustainable business, QTC places great emphasis on being truly socially responsible by considering all stakeholders involved from shareholders, employees, customers, local communities, to society at large.

To ensure the success of the organization, and that all operations are up to standard under the company's visions and objectives, instill confidence in all stakeholders, and express the company's responsibilities to the society, the following Corporate Social Responsibilities Policy is created for all QTC personnel to strictly adhere to:

1. Conduct business with honesty and fairness under good governance. Promote transparency in the management of the organization in accordance to international practices.
2. Respect and place a great importance on the rights of employees in all level.
3. Create awareness on the importance of labor and promote their developments to effectively drive the organization forward.
4. Commit to, and demonstrate the company's responsibilities to the environment in order to reduce environmental and societal impacts that may have been caused by the company's operations.
5. Adhere to country laws and trade regulations, as well as company rules, policies, orders, or related announcements. Prevent corruption, abuse of power, and conflict of interests.
6. Publish accurate product information with respect to consumer's rights. Strictly adhere to consumer protection laws.
7. Continually promote and participate in activities that benefit the public. Encourage employees to have social responsibility.

The success of the organization under this policy depends on the understanding, commitment, and adherence to the company's rules and regulations. It is a reflection of the commitment of all QTC employees to sustainably develop the organization.

## Environmental and Energy Policy

QTC Energy PCL is committed to become the leading manufacturer, distributor, and service center of Distribution Transformer with its high quality, world-class, product and services. In order to ensure all employees are aware of the environment and are efficient in their energy usage in every step of the production process, QTC has laid out the following Environmental and Energy Policy for all personnel to strictly adhere to:

1. Analyze, assess, control, and reduce the use of energy to continually increase energy efficiency.
2. Focus on the prevention and review of negative impacts from all activities that are related to the environment and the use of energy.
3. Provide continual support on information, personnel, budget, time, training, and building awareness for all employees and related parties to ensure that the company's objectives and goals concerning the environment and energy are achieved.
4. Review and update policies, objectives, as well as environmental and energy management goals in order to ensure systematic and continual growth.
5. Track, monitor, and evaluate the effectiveness of environmental and energy management to ensure compliance with related laws and regulations.
6. Encourage the use of energy efficient designs, equipment, and services in order to improve the company's energy and environmental performance.

This Environmental and Energy Policy has been published and circulated to all employees and stakeholders in every level of the organization to acknowledge, understand, and strictly follow.

## Quality Policy

QTC Energy PCL is committed to take responsibility for all of its products with honesty and transparency, as expected by its customers. The following Quality Policy has been developed and circulated to all employees in every levels of the company to adhere to in order to maintain the products' qualities :

**"We are committed to continually develop and produce quality products for the satisfaction of our customers"**

To ensure that the operation of QTC Energy PCL will be carried out in accordance to the Quality Policy and in line with the company's quality control plans and related regulations, the following objectives have been established :

1. To produce quality products that answer to the needs of the customers, with an annual reject rate of 0%.
2. Distribute products to customers with an annual product deliveries goal of 95%.
3. Develop human resources by ensuring that employees in each discipline must attend at least 50% of trainings each year.
4. To increase operational worker's abilities, training must be given to reduce skill gaps in the workplace by 50% each year.
5. Conduct customers' satisfaction survey at least once a year with 70% of the surveys reporting a minimum of 80% satisfaction.
6. To ensure customer satisfaction, customer's complaints (not including reject rate) should not exceed 0.5% per year.



# T-TEAMWORK

We began as a team and we keep alive the team spirit to ensure the quality of work in all units, and we systematically support each other throughout the entire process. We place great importance on human resources at all levels by organizing both national and international workshops regularly. Moreover, we care for the health and the quality of life of all our employees.



## Human Resource Development Policy

QTC's vision is to become a world class producer of electrical transformers. It is the company's mission to serve the demanding needs of customers to improve their electrical system to international standards. This has led to the formulation of QTC's Human Resource Development Policy that will equip all employees with the skills and abilities to realize the company's vision and mission. The fundamental objectives of human resource development are as follows;

1. **Constructive Engagement** : All employees are encouraged to contribute their ideas in many different areas of work. The level of contribution from each employee may vary but must all be constructive and focus on problem-solving, not finger-pointing. Employees should be open to listen to and respect different opinions.
2. **Sharing Success** : Create a working environment in which all employees share in the company's success. This is reflected in the remuneration policy that is derived from the success of the company rather than the success of each individual. The company also encourages employees to gather knowledge on-the-job and learn from repeating and improving on past experiences. The exchange of knowledge within the company is highly encouraged. QTC must be acutely aware of the changes in the business environment and must be responsive. The success of the entire organization is the result of the success of every employee, departments, and business sectors.
3. **Better Attitude** : In order to meet the needs of customers, society, and shareholder for continuous improvement, all employees must have an attitude to make all things "better than before".

## Human Resource Development Guidelines

1. Apply the Performance Management System (PMS) to achieve the company's goal
2. Improve all employees through various events and activities such as the 5S, suggestions, Kaizen, and Teamwork.
3. Encourage employees to take part in programs to develop their English competency and conscience
4. Promote "self-learning" among employees by establishing a library, and the KM room.
5. Provide local and international study tours for employees
6. Apply the Total Quality Management (TQM) system to ensure employees learn to improve various production process and working procedures

## Quality of Life Improvement Guidelines

1. **Zero Accident Project** : to campaign against accidents in the workplace and promote employee safety
2. **Health Improvement Project** : to promote employees' health and fitness in the campaign, "reduce, reject, and quit smoking and drinking alcohol", thereby reducing street accidents.
3. **White Factory Project** : to prevent employees from using drugs
4. Provide health check - ups for new employees prior to starting work at the company, as well as annual health check-ups for all employees
5. Create a "Happy Work Place" environment to ensure employee job satisfaction

# A-ACHIEVEMENT

As a result of the efficiency of our management, we have been certified with several quality standards and received many awards of success from both inside the country and overseas. Yet we are still ever committed to improving our performance to achieve even greater successes.



## TESTS

QTC transformer can be designed, manufactured and tested according to National and International standards list below :

- TIS 384-2543
- IEC 60076
- IEEE Std C57.12.00
- AS 2374
- JEC 204
- VDE 0532
- Or Any other standard specified by customers

TIS 17025-2543 (2005) Certificate for Electrical Test Laboratory from Thai Industrial Standard Institute (TISI), Ministry of Industry.

## ROUTINE TESTS

Each and every transformer is subjected to a routine quality test as follows :

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

## TYPE TESTS

Type tests will be carried out and conducted based on customer requests and on our own initiative. These have enabled QTC to ensure the constant quality and reliability of our transformer products. The details of the type test as follows.

- Temperature-rise test
- Lightning impulse test



## I : INNOVATION

We are innovative. We have even invented our own business software. And we have copyrighted that software because it is very accurate in calculating and processing. It responds to limitations and covers all the requirements of our customers under the world-class standard.

### CERTIFICATES



№00.384-2543



Q-MARK



Short Circuit  
Performance  
CESI Italy



Short Circuit  
Performance  
KEMA Netherland

ISO 9001

Quality Management  
System

ISO/IEC 17025

Certificate of  
Laboratory Accreditation

OHSAS 18001

Occupational Health  
and Safety Management  
System

ISO 14001

Environmental  
Management System

ISO 50001

Energy Management  
System



Green Industry  
(Level 4)



Carbon Footprint  
for Organization  
( CFO )





## L : LEADERSHIP

Applying high technology in production and focusing on quality control has earned us considerable recognition as a top-quality transformer manufacturer both nationally and international. We also are the leading innovator and developer of much new production know-how in this business.



### POWER PLANT REFERENCE



## S-SERVICE

A first-rate product deserves first-rate service. And at QTC that service excellence has generated for us truly loyal customers who have confidence in our product and the service we provide. Our engineering Team offers superior electrical system consultancy and our professional Sales Team closely assists customers both before and after sales. More importantly, our Sales Team has been trained to be thoroughly knowledgeable in our products and they are ready to put that knowledge to use in practical and innovative advice. Finally, we are confident in the service provided by our Delivery Team which ensures prompt and efficient delivery.



### AFTER SALES SERVICE (24 hours)

QTC offers complete 24/7 Expert After-Sales Service for the life of our transformer. To ensure high efficiency and optimized operation at all times, a QTC service team is available round the clock, 24/7. A highly skilled engineer together with an experienced technician will respond promptly to secure and solve your transformer problems. QTC has the equipment and instruments calibrated by international institutes to ensure excellent after-sales service you can depend on.



