



QTC ENERGY PCL.

QTC DRY TYPE

Cast Resin Transformer

The Leading in Power Distribution



INTRODUCTION

QTC Energy Public Company Limited is Thailand's leading manufacturer and supplier of distribution transformers. QTC was established since 1996. Our QTC brand Dry Type Cast Resin Transformers are made by our OEM (Original Equipment Manufacturer) factory.

Our OEM factory is a certified company for its Quality Management according to ISO 9001:2008, as well as its Environmental Management according to ISO 14001:2004 and also have passed stringent Short Circuit Withstand test and E2,C2,F1 conducted by CESI and Labein. Normally, our transformers are designed for ambient temperature of 40°C. Temperature rise of winding is 100 K. QTC cast resin transformers are made in compliance to the IEC, ANSI and other standards to meet all requirements in Thailand.

Why choose cast resin transformer

Highly Secure Transformers

By its construction and constituents, the cast resin transformer is a flame retardant electrical device. CRT will provide you maximum safety, with the least fire protection around, therefore keeping you away from severe damages and fatalities.

Power increased by Air forced Cooling

The power reserves of CRT are far greater than the Oil Transformers. Another advantage is that the power capacity can be increased by simply adding fans for an AF (Air-Forced cooling) operation thus obtaining up to 25% to 40% power increase.

No Maintenance / Maintenance Free

Due to its inherent design, constituents and its construction, the maintenance of Cast Resin Transformers reduces to a visual check and some air for dusting. The absence of oil plus a hermetically sealed windings reduce your maintenance cost to virtually zero.

High Reliability

Since introduction the CRT have served most demand and complex applications, with a minimal failure rate. The reliability figures for CRT has shown better than the Oil Transformers, by the testimony and reports of international consulting and surveying companies

No Extra Civil Works

Unlike its oil counterpart, the CRT Transformer requires no oil slumps, no fixing and placement restrictions, no fire barrier. In all, it requires no civil works, thus allowing you to place your transformer very close to the load saving you a lot in terms of cabling and transmission loss

Unforgiving Environment

If properly designed for different environmental, climatic and fire classes, you can rest assured that your CRT will outperform wherever other transformers type have long stopped operating.

PRODUCT

General characteristic according to IEC standard
IEC 60076-11
IEC 60076-16

One or Three Phase

Rated Power: from 630KVA up to 2500 kVA

Voltages: from 1 up to 36 kV

Class : E2 C2 F1

Thermal Class F (155 °c)

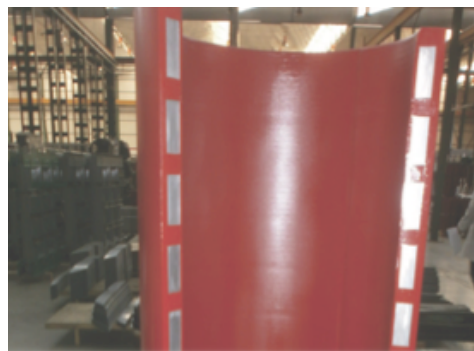


MAGNETIC CORE

- Cold-rolled silicon grain oriented steel sheet with very low no-load losses and noise
- Assembly method: Step-lap (7-9-18 sheet/step)
- Core in contact with air
- Painted to prevent it from rust

PRIMARY WINDING (H.V.)

- Copper or Aluminum
- Several coils (layers) connected to each other
- Outputs in the middle section (regulation)
- Insulation (same thermal class)
- Encapsulation under vacuum
- Process : Winding into mold, where resin added
- Oven curing process (once encapsulated)



SECONDARY WINDING (L.V.)

- Copper or Aluminum
- Foil or flanges (or group of flanges)
- Beginning and end of winding: welded plates for connections

COOLING FANS

- Installed under the HV and LV windings
- Temperature rises up ,fans canalize the air flow into the interspaced HV-LV
- Different sizes, according to rated power 25% overload. Up to 40% overload (under request)



ACCESSORIES

Standard accessories include:

- T2612-B: Temperature Control Unit, with three change-over dry contacts (for alarm, trip and fault).
- PT100 for each LV winding
- Cross-flow fans (AF up 25% or 40%).
- Bi-directional wheels for the transformer.
- IP21 Enclosure.
- Lifting lugs for transformer.
- Name plate.

Optional accessories

(with additional cost)

- Lightning arrester
- T2612: unit with RS485 Modbus output
- T2612-C: unit with analog 4-20 mA output
- T2612-AD: unit with both RS485 Modbus and analog 4-20 mA

TECHNICAL DATA

STANDARD

In accordance with standard
IEC 60076-11//EN 50541-2011
E2 C2 F1 // CLASS F

COMMON ELECTRICAL CHARACTERISTICS

Frequency	50 Hz
Vector group	Dyn11 or Dyn5
Primary voltage (at no load)	6 to 36 kV
HV tapping range (off-load)	3 to 7 positions (2,5%)
Secondary voltage (at no load)	380 to 440 V (Ph-Ph) 220 to 254 V (Ph-N)
Ambient temperature (Max)	40 °C
Attitude above sea level	≤ 1000 m
Routine test	Included
Type test	Optional
Special test	Optional

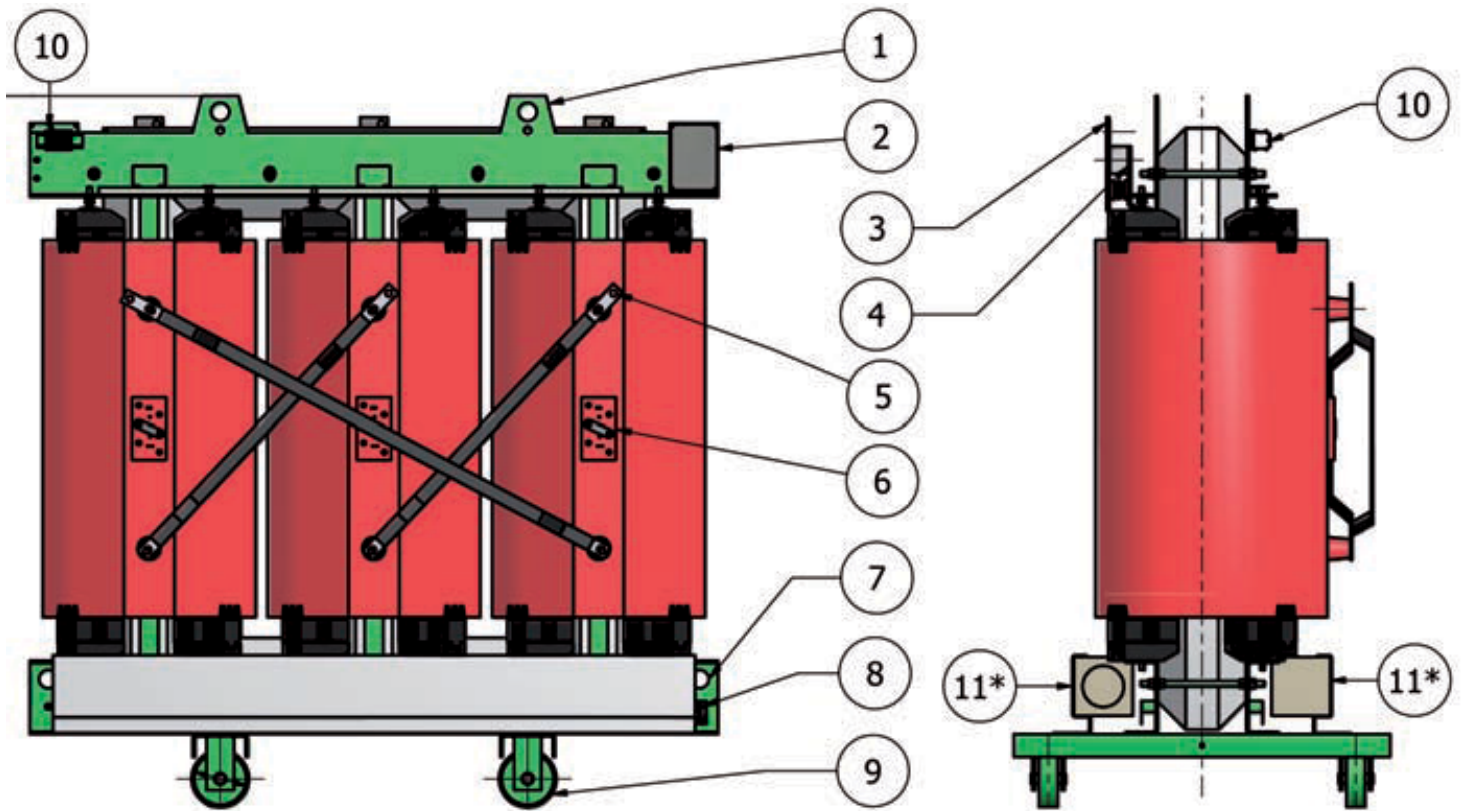
ELECTRICAL CHARACTERISTICS FOR INSULATION LEVEL ≤ 24 kV

	630	800	1000	1250	1600	2000	2500
Rated Power kVA							
Rated primary voltage	6 to 24 kV						
Rated insulation level	12 kV BIL(75/28kV); 24 kV BIL(125/50kV)						
Losses W	no load losses	1650	2000	2300	2800	3100	5000
	load losses at 120°C	7600	9400	11000	13000	16000	23000
Rated impedance voltage %	6	6	6	6	6	6	6
No-load current 100%Vn	1.2	1.1	1	1	0.9	0.9	0.8
Noise level dB(A)	Sound power LwA	70	72	73	75	76	81
	Sound pressure LpA	63	65	66	67	68	73

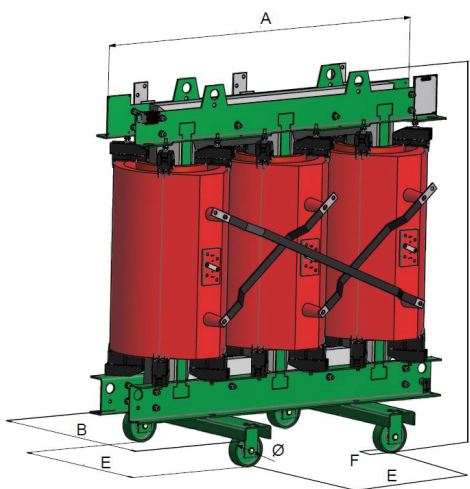
ELECTRICAL CHARACTERISTICS FOR INSULATION LEVEL ≤ 36 kV

	630	800	1000	1250	1600	2000	2500
Rated Power kVA							
Rated primary voltage	33 to 36 kV						
Rated insulation level	36 kV BIL(170/70kV)						
Losses W	no load losses	2200	2700	3100	3600	4200	5800
	load losses at 120°C	8000	9600	11500	14000	17000	25000
Rated impedance voltage %	6	6	6	6	6	6	6
No-load current 100%Vn	1.3	1.2	1.1	1.1	1	1	0.9
Noise level dB(A)	Sound power LwA	71	72	73	75	76	81
	Sound pressure LpA	64	65	66	67	68	73

DESCRIPTION/DIMENSION



1. LIFTING EYES 2. RATING PLATE 3. L.V. TERMINAL 4. NEUTRAL TERMINAL 5. H.V. TERMINAL 6. TAP-CHANGER
7. COUPLERS 8. EARTHING 9. ORIENTABLE WHEELS 10. LIFTING EYEBOLTS 11. FAN COOLING (optional)



INSULATION LEVEL ≤ 24kv								
Rated Power kVA	630	800	1000	1250	1600	2000	2500	
Approximate Dimensions (mm)	A	1500	1550	1600	1700	1800	1900	2200
	B	820	820	820	1000	1060	1060	1420
	C	1550	1650	1760	1980	2080	2180	2260
	E	670	670	670	820	820	820	1070
	F	40	40	40	70	70	70	70
	Ø	125	125	125	200	200	200	200
Total weight (Kg)	1600	1850	2200	2750	3300	3900	5100	

INSULATION LEVEL ≤ 36kv								
Rated Power kVA	630	800	1000	1250	1600	2000	2500	
Approximate Dimensions (mm)	A	1800	1900	2000	200	2100	2200	2300
	B	940	960	960	1050	1150	1200	1420
	C	1750	1900	2000	2200	2270	2350	2400
	E	670	670	670	820	820	820	1070
	F	40	40	40	70	70	70	70
	Ø	125	125	125	200	200	200	200
Total weight (Kg)	2400	2800	3200	3800	4500	5100	6700	

TEST

Electric testing laboratory



Routine test

Its equipment allows us to perform the test and check the results in accordance with standards in force (IEC 60076-11). The following routine test are performed in all the transformers:

- Measurement of winding resistance.
- Measurement of voltage ratio and check of phase displacement
- Measurement of no-load loss and current at 100% of rated voltage
- Measurement of short-circuit impedance and load loss
- Measurement of partial discharges
- Dimensional control
- Dielectric routine test:
 - Applied voltage test.
 - Induced voltage withstand test.

Type test, and Special test (with extra cost).

On request and in accordance with the customer, the following TYPE or SPECIAL Tests can be performed:

- Measurement of zero-sequence impedance.
- Measurement of no load current harmonics.
- Full wave lightning impulse test.
- Temperature-rise test.
- Determination of sound level.

CERTIFICATES



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