SIEMENS energy

Siemens Energy Cast-resin (Dry-type) Transformer

www.siemens-energy.cn

Siemens Energy Transformer (Guangzhou) Co., Ltd.

Siemens Energy Transformer (Guangzhou) Co., Ltd. is a large Sino-German joint venture with 63% of the total shares held by Siemens Energy and 37% shares held by Guangzhou Industrial Investment Holdings Group Co.,Ltd. We are one of the global technology leaders in transformer industry with total assets more than CNY 2.5 billion. And as one of the key enterprises of Guangdong equipment manufacturing industry, our company has been listed in "Top 100 Electrical Enterprises in China" for several years.

Our company was established in 1998 covering about 88,000m^2 with more than 700 employees. We provide power transformers from 110kv to 1000kV, HVDC converter transformers up to ± 1100kV and cast-resin transformers up to 20MVA/35kV related service to utilities, industry and building customers. We are one of the few companies who are able to manufacture full voltage range transformers in the same factory in China. Our company has provided lots of reliable power transformers and a large quantity of distribution transformers in China and overseas since established on September 15,1999.

The new DT factory was officially put into operation on July 15th, 2021. It is designed and operated according to "industry 4.0" Standard, which is a global model factory of Siemens Energy in the field of distribution transformer. On the basis of lean production, the overall production process is highly integrated with intelligence and automation, and the factory takes a lead in realization of standardized intelligent operation and digital manufacturing in the field of distribution transformer manufacturing.

PRODUCT STRUCTURE

1 Three-limb core
Made of grain-oriented and low-loss silicon steel sheets. Two component varnish for aggressive environment.

2 LV winding
Foil type. Turns firmly glued together by means of insulating sheet wrapper material.

3 HV winding
Consisting of vacuum-potted single foil-type coils.

4 Insulation cylinder
Reinforce insulation, improve the heat dissipation of transformer.

5 HV terminals
Optimal layout schemes to adapt for various substations. HV tapping link can adjust itself to system voltage when power off.

6 LV terminals
Standard arrangement: top
Customization: bottom

7 Coil support system
To isolate core and winding from mechanical vibrations, reduce noise emission.

8 Clamping frame and truck
Made of steel plate and processed by laser cutting machine with high accuracy. Rollers can spin both horizontally and vertically.

9 Sensformer®
The sensformer can read the winding temperature, winding current in real time, provide overload alarm, GPS location, safe and secured information cloud platform.

Remark:
- Rollers and Sensformer are not standard configuration.
- Siemens Energy is a trademark licensed by Siemens AG.

PRODUCT FEATURES

Siemens Energy cast-resin distribution transformer (CRT) has been in successful service since 1965. Over 150,000 units Siemens Energy CRT have proven themselves in power distribution or converter operation all around the globe.

Epoxy resin, curing agent, insulating materials and other major materials of Siemens Energy CRT are imported for quality assurance. The registered trademark GEAFOL® and CARECO® refer to Siemens Energy aluminum and copper transformer respectively. Siemens Energy CRT is the preferred choice in industrial field providing with high performance and low losses.

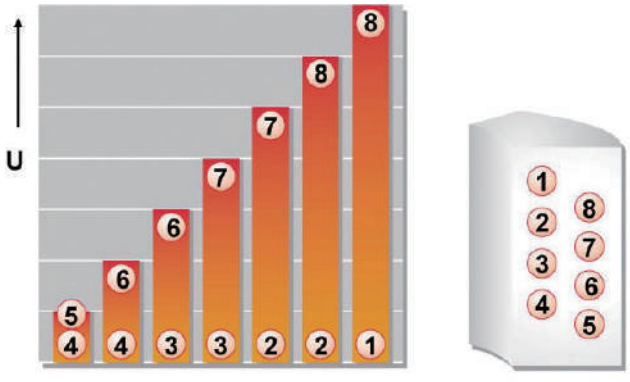
HV foil winding

The high-voltage windings twine together by copper foil (or aluminum foil) interleaved with high-grade insulating foils. The coils are placed in a heated mold and are potted in a vacuum furnace with specially blended epoxy resins. The vacuum casting process excludes the air in the windings to ensure the low partial discharge. The thermal expansion coefficients of conductor and cast resin are so similar that thermal stresses resulting from load changes are kept to a minimum degree to improve the anti-crack ability. Compared with impregnating products, it processes higher overload capacity.

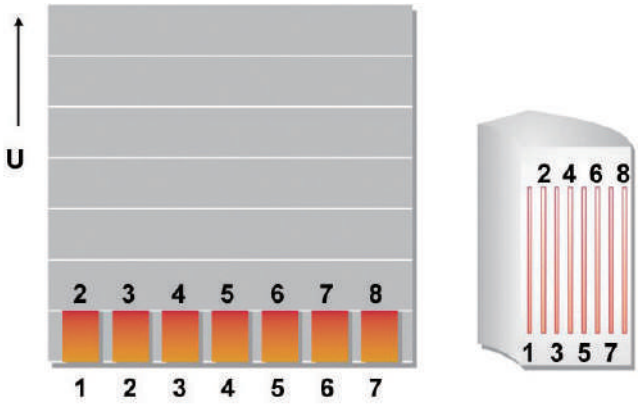
TUBOLY HV winding machine

Foil winding is better than wire winding

The foil windings combine a simple technique with a high degree of electrical safety. The insulation is subjected to less electrical stress than in other type of windings. In a conventional round-wire winding, the interlayer voltage reaches several times of the interturn voltage. However, in foil winding, the interlayer voltage equals to the interturn voltage. Thus, the foil winding can withstand higher AC and impulse voltage.



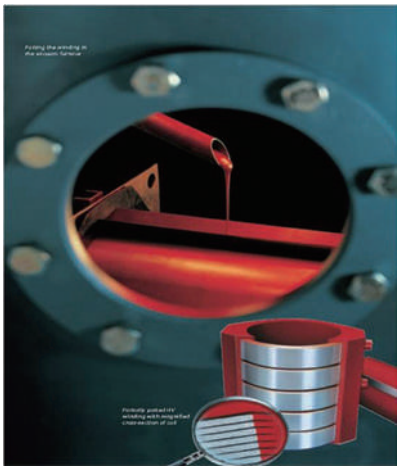
Round-wire winding
The interlayer voltage add up to several times of the interturn voltage.



Foil winding
The interlayer voltage equal to the interturn voltage.

Vacuum casting

Windings are casted in the automatic vacuum casting machine according to specific curing temperature curve. Horizontal casting process is adopted to facilitate gas discharge. Accurate control of resin component proportion and vacuum degree, eliminate any quality problems incurred. Compared with the impregnating products, it has advantages in mechanical strength and anti-short circuit capacity.

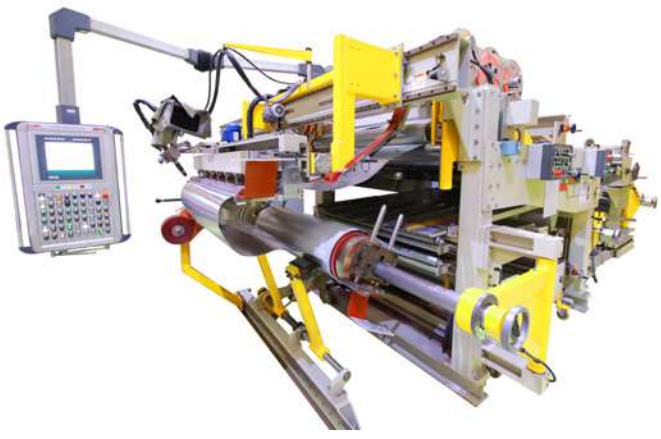


HEDRICH vacuum casting machine

LV foil winding

The standard low-voltage winding twine by copper foil (or aluminum foil) with interleaved DMD which bear less dielectric stress. The assembled coils are then oven-cured to form uniformly bonded solid cylinders that are anti-moisture. Such winding has excellent dynamic stability under short-circuit condition.

Finished LV winding



TUBOLY LV winding machine

Step Lap Lamination

Excellent cold rolled grain-oriented silicon steel is used for core. The silicon steel is cut by automatic machine with high accuracy and small burr. Low no-load loss and current are achieved by the technology of pin-stacking and stacking without upper yoke. The structure can reduce the noise effectively.

Step lap lamination

Enclosures

CRT is recommended to be installed indoor, for example in electric room or in various mental enclosure. Transformer shall avoid the live contact of the terminals or winding surface, direct sunlight and water. A variety of indoor enclosures in different protection classes (IP20, IP21 is recommended) are available for the transformers. They can be deposited alone or assembled with high/low-voltage switchgear panel as a indoor compact substation. If the site has poor ventilation, fans or other devices may be needed. Still, transformer can be placed outdoor with IP33 enclosure or above.

IP20 Steel Enclosures

Temperature monitoring

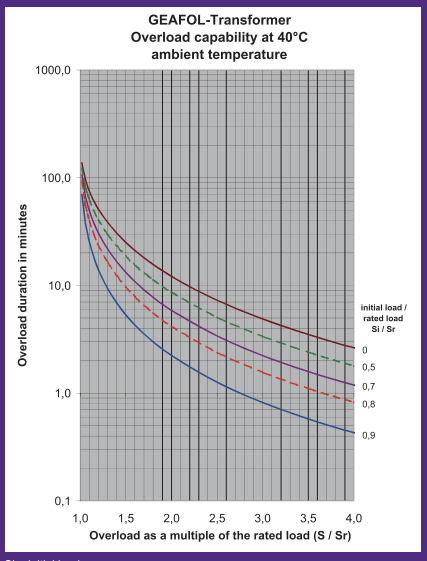
Each CRT is equipped with a temperature indicator, with three sensors in LV windings. PT100 sensors are used for detecting maximum temperature of winding. Temperature indicator protects the transformer by output alarm or trip signal. Special type of temperature indicator（RS485, 4~20rnA) is as request of customer.

Overload capability

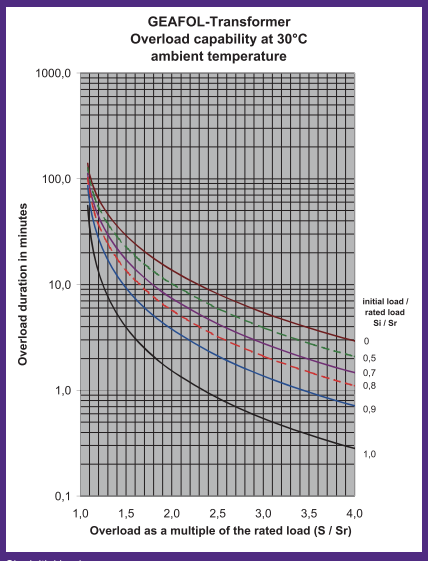
Siemens Energy CRT can be overloaded up to 40% with a corresponding increase in impedance voltage and load losses providing that additional cooling fans are installed. Short-time overloads makes no difference to transformer as long as the maximum winding temperatures are not exceeded (depending on initial load and ambient temperature).

Cooling fans

Overload curve of Siemens Energy GEAFOL® CRT (without cooling fans)



Si = initial load
Sr = rated load
S = load



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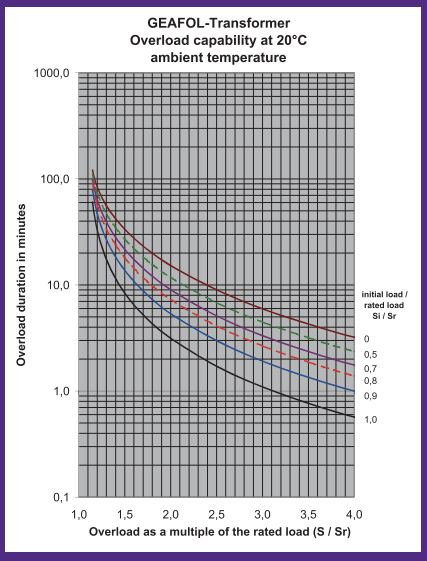

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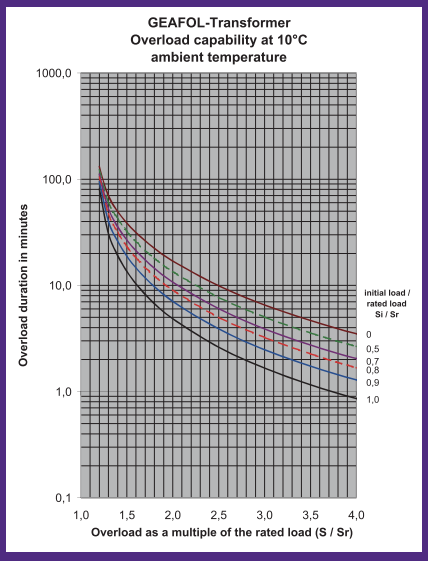


Si = initial load
Sr = rated load
S = load

Fire safety

Siemens Energy CRT is purely made up of material that is flame-retardant and self-extinguishing. No additional substances, such as aluminum oxide trihydrate, which could negatively influence the mechanical stability of the cast-resin molding material, are used. Internal arcing caused by electrical faults and externally flames will not result in any explosion or fire.As long as the fire is put out, the transformer will extinguish itself. This design has been approved by fire officials in many countries for installation in populated buildings and other constructions. Many tests show that combustion residue does no harm to environment.

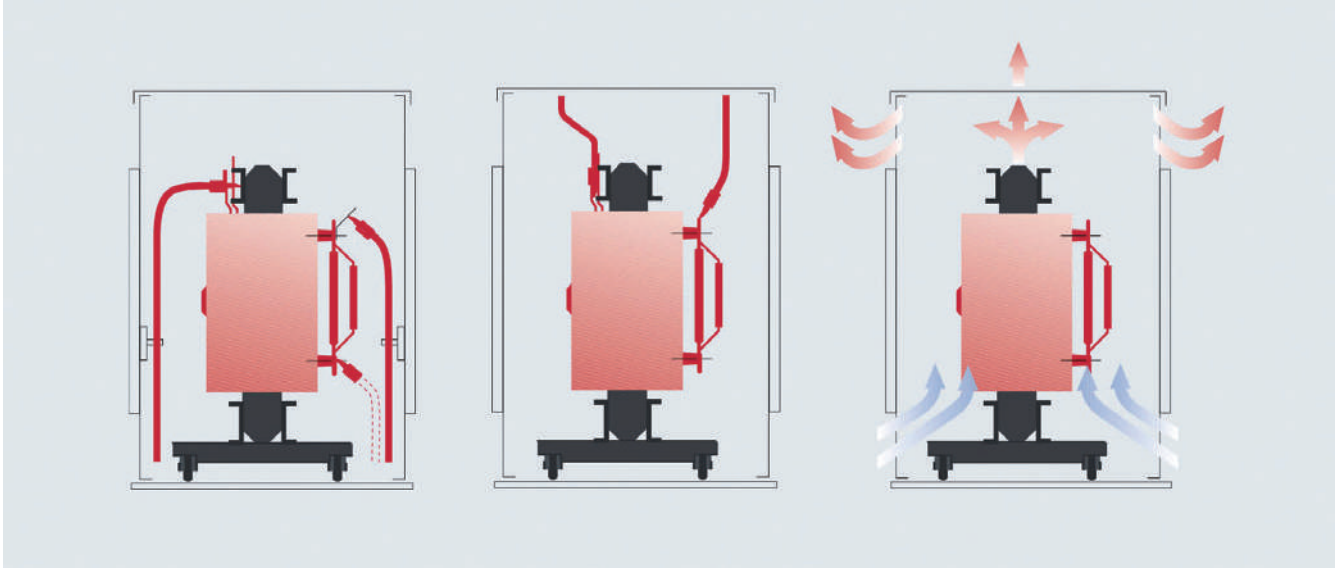
Siemens Energy CRT can meet the requirements of protection classes below:

- Environmental category E3
- Climatic category C3
- Fire category F1

Flammability test

Connection

Instead of the standard terminals, plug-type elbow connectors can be supplied for the high-voltage side with LI up to 170kV. Primary cables are usually connected with the transformer from trenches on the bottom and can also be connected from top. Secondary connections can be made by multiple insulated cables or bus bar. Flexible connection is recommended to reduce the noise in particular cases. Recommend the following connections:



Sensformer®

From Transformer to Sensformer®

Transformers are positioned at each critical node in the energy grid, from power generation stations all the way down to industrial and private consumers – yet up until now, they were only perceived as “voltage transforming devices”. With the newly introduced Sensformer®, the transformer has evolved into an info-hub.

The Sensformer® comes with visualization and analytics. Operators get a comprehensive and quick overview about their assets and can thus improve their operations. The corresponding data platform is an open ecosystem intelligently using data from the Sensformer®.

Sensformer® Features at a glance

- Measuring winding temperature, winding current, GPS positioning and environmental calculation (such as ambient temperature, humidity, weather & etc.)
- The cloud can provide real-time information, such as equipment details, installation location, changing trends, alarm information, and load indications
- Provide real-time alarm via email and mobile phone SMS
- Collect data every minute and upload it to the cloud in real time
- Compliant with relevant cyber security standards (such as NERC CIP, ISO and IEC 27001)

Unleashing the power of digitalization

Sensformer® provides an easy and safe entry platform for digitization, which can safely and quickly obtain asset status and operating data, and enhance the efficiency of asset management. Once the alarm is triggered, plenty of key data will be immediately pushed to operation and maintenance personnel.

The Sensformer® enables its operator to optimize the quality and speed of operational decisions. Predict and troubleshoot more flexibly, faster, and more efficiently, and even avoid failures completely.

PRODUCT STANDARDS

Siemens Energy CRT can be designed and manufactured as per IEC/IEE/ANSI standards.

STANDARD CRT Um=12kV Technical Datasheet CARECO®

HV Voltage: 6kV/6.3kV/6.6kV/6.9kV/11kV
LV Voltage: 400V/415V/433V/420V
Frequency: 50HZ/60HZ

HV tapping: ± 2*2.5% and/or ± 5%
Vector group: Dyn11/ Dyn5/Dyn1/ Yyn0 or others
Material of winding: Copper

Rated Power (kVA)	No-load Loss (kW)	On-load Loss 120°C (kW)	Short Circuit Impedance (%)	Noise (L_{PA}-1) (dB)	No-load Current (%)	Base Frame Q1XQ2 (mm)	Weight (kg)	Outline Dimension (LengthxWidthxHeight) (mm)	Enclosure Dimension (IP20/IP21) (LengthxWidthxHeight) (mm)
100	0.40	1.57	4	47	1.5	520x520	880	1300x765x955	1600x1100x1400
125	0.47	1.85		48	1.3	520x520	900	1300x765x965	1600x1100x1400
160	0.54	2.13		49	1.3	520x520	920	1300x765x975	1600x1100x1400
200	0.62	2.53		50	1.1	520x520	1040	1310x765x955	1600x1100x1500
250	0.72	2.76		50	1.1	520x520	1280	1310x760x975	1600x1100x1500
315	0.88	3.47		50	1	670x670	1320	1380x820x1060	1700x1300x1500
400	0.98	3.99		50	1	670x670	1450	1410x820x1120	1700x1300x1500
500	1.16	4.88		50	1	670x670	1690	1460x820x1210	1800x1300x1500
630	1.34	5.88		50	0.85	670x670	1890	1480x820x1210	1800x1300x1500
630	1.30	5.96		50	0.85	670x670	1920	1480x820x1210	1800x1300x1500
800	1.52	6.96	6	51	0.6	670x670	2260	1570x850x1350	1900x1300x1700
1000	1.77	8.13		52	0.6	820x820	2700	1650x990x1400	1900x1400x1700
1250	2.09	9.69		54	0.5	820x820	3180	1730x990x1430	2100x1400x1700
1600	2.45	11.73		54	0.5	820x820	3830	1780x990x1500	2100x1400x1900
2000	3.05	14.45		56	0.5	1070x1070	4810	1910x1280x1630	2200x1650x2100
2500	3.6	17.17		60	0.5	1070x1070	5760	2020x1280x1750	2400x1650x2200
2000	3.05	15.96	8	56	0.5	1070x1070	4950	1930x1280x1630	2200x1650x2100
2500	3.6	18.89		60	0.5	1070x1070	5830	2040x1280x1750	2400x1650x2200
3150	4.52	21.16		62	0.4	1070x1070	7220	2180x1280x1840	2500x1650x2200
3500	5.30	23.50		65	0.60	1070x1070	8150	2240x1280x2195	2600x1650x2500

Remark: We reserve the right to make technical changes or modify the contents of this catalogue without prior notice.

GEAFOL®

HV Voltage: 6kV/6.3kV/6.6kV/6.9kV/11kV
LV Voltage: 400V/415V/433V/420V
Frequency: 50HZ/60HZ

HV tapping: ± 2*2.5% and/or ± 5%
Vector group: Dyn11/ Dyn5/Dyn1/ Yyn0 or others
Material of winding: Aluminum

Rated Power (kVA)	No-load Loss (kW)	On-load Loss 120°C (kW)	Short Circuit Impedance (%)	Noise (L_{PA}-1) (dB)	No-load Current (%)	Base Frame Q1XQ2 (mm)	Weight (kg)	Outline Dimension (LengthxWidthxHeight) (mm)	Enclosure Dimension (IP20/IP21) (LengthxWidthxHeight) (mm)
100	0.40	1.57	4	47	1.5	520x520	770	1300x765x965	1600x1100x1500
125	0.47	1.85		48	1.3	520x520	780	1300x765x985	1600x1100x1500
160	0.54	2.13		49	1.3	520x520	870	1300x765x995	1600x1100x1500
200	0.62	2.53		50	1.1	520x520	950	1310x710x1045	1600x1100x1500
250	0.72	2.76		50	1.1	520x520	1030	1320x760x1090	1600x1100x1500
315	0.88	3.47		50	1	670x670	1180	1360x820x1195	1700x1300x1600
400	0.98	3.99		50	1	670x670	1360	1410x820x1225	1700x1300x1600
500	1.16	4.88		50	1	670x670	1590	1490x835x1260	1800x1300x1600
630	1.34	5.88		50	0.85	670x670	1760	1510x830x1450	1800x1300x1800
630	1.30	5.96		50	0.85	670x670	1800	1510x830x1460	1800x1300x1800
800	1.52	6.96	6	51	0.6	670x670	2060	1580x850x1595	1900x1300x1900
1000	1.77	8.13		52	0.6	820x820	2460	1620x990x1700	2000x1400x2000
1250	2.09	9.69		54	0.5	820x820	2870	1730x990x1725	2100x1400x2000
1600	2.45	11.73		54	0.5	820x820	3650	1890x990x1650	2300x1400x2200
2000	3.05	14.45		56	0.5	1070x1070	4330	2000x1280x1870	2400x1650x2200
2500	3.6	17.17		60	0.5	1070x1070	5020	2150x1280x2000	2500x1650x2300
2000	3.05	15.96	8	56	0.5	1070x1070	4450	2010x1280x1880	2400x1650x2200
2500	3.6	18.89		60	0.5	1070x1070	5150	2160x1280x2030	2500x1650x2300
3150	4.52	21.16		62	0.4	1070x1070	6220	2330x1280x2000	2700x1650x2500
3500	5.30	23.50		65	0.60	1070x1070	7050	2540x1280x2385	2800x1650x2600

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STANDARD CRT Um=24kV Technical Datasheet CARECO®

HV Voltage: 20kV/22kV/22.8kV/24kV
LV Voltage: 400V/416V/415V/433V/420V
Frequency: 50HZ/60HZ

HV tapping: ± 2*2.5% and/or ± 5%
Vector group: Dyn11/ Dyn5/Dyn1/ Yyn0 or others
Material of winding: Copper

Rated Power (kVA)	No-load Loss (kW)	On-load Loss 120°C (kW)	Short Circuit Impedance (%)	Noise (L_{PA}-1) (dB)	No-load Current (%)	Base Frame Q1XQ2 (mm)	Weight (kg)	Outline Dimension (LengthxWidthxHeight) (mm)	Enclosure Dimension (IP20/IP21) (LengthxWidthxHeight) (mm)
200	0.73	2.94	6	50	1.5	670x660	1370	1420x875x1220	2000x1400x1600
250	0.84	3.42		52	1.3	670x660	1380	1400x870x1230	2000x1400x1600
315	0.97	4.08		52	1.3	670x660	1480	1430x910x1295	2000x1400x1600
400	1.15	4.84		52	1.1	670x660	1660	1480x910x1355	2000x1400x1700
500	1.35	5.79		52	1.1	670x660	1820	1490x860x1405	2000x1400x1700
630	1.53	6.84		53	1.0	670x660	2030	1540x870x1430	2000x1400x1700
800	1.75	8.26		53	0.6	670x660	2380	1590x880x1550	2000x1500x1900
1000	2.07	9.78		53	0.6	820x820	2740	1620x990x1570	2100x1500x1900
1250	2.38	11.5		54	0.6	820x820	3330	1710x990x1615	2200x1500x1900
1600	2.79	13.8		56	0.6	820x820	4070	1810x1010x1680	2300x1500x2100
2000	3.24	16.3		58	0.5	1070x1070	5130	1940x1280x1765	2400x1700x2100
2500	3.87	19.3		59	0.5	1070x1070	6070	2030x1280x1885	2500x1700x2200
2000	3.24	17.8	8	58	0.5	1070x1070	5180	1950x1280x1785	2400x1700x2100
2500	3.87	21.2		59	0.5	1070x1070	6130	2030x1280x1885	2500x1700x2200
3150	4.88	22.4		62	0.4	1070x1070	7350	2180x1280x1975	2600x1700x2300
3500	5.85	24.5		65	0.5	1070x1070	8030	2280x1280x2170	2700x1700x2400

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GEAFOL®

HV Voltage: 20kV/22kV/22.8kV/24kV
LV Voltage: 400V/416V/415V/433V/420V
Frequency: 50HZ/60HZ

HV tapping: ± 2*2.5% and/or ± 5%
Vector group: Dyn11/ Dyn5/Dyn1/ Yyn0 or others
Material of winding: Aluminum

Rated Power (kVA)	No-load Loss (kW)	On-load Loss 120°C (kW)	Short Circuit Impedance (%)	Noise (L_{PA}-1) (dB)	No-load Current (%)	Base Frame Q1XQ2 (mm)	Weight (kg)	Outline Dimension (LengthxWidthxHeight) (mm)	Enclosure Dimension (IP20/IP21) (LengthxWidthxHeight) (mm)
200	0.73	2.94	6	50	1.5	670x660	1210	1450x990x1340	2000x1500x1700
250	0.84	3.42		52	1.3	670x660	1250	1420x990x1340	2000x1500x1700
315	0.97	4.08		52	1.3	670x660	1310	1440x990x1395	2000x1500x1700
400	1.15	4.84		52	1.1	670x660	1470	1490x990x1470	2000x1500x1800
500	1.35	5.79		52	1.1	670x660	1640	1530x990x1480	2000x1500x1800
630	1.53	6.84		53	1.0	670x660	1890	1580x990x1525	2000x1500x1800
800	1.75	8.26		53	0.6	670x660	2170	1630x890x1570	2100x1500x1900
1000	2.07	9.78		53	0.6	820x820	2680	1720x995x1640	2100x1500x1900
1250	2.38	11.5		54	0.6	820x820	3040	1810x1005x1735	2200x1600x2100
1600	2.79	13.8		56	0.6	820x820	3810	1870x1015x1955	2200x1600x2300
2000	3.24	16.3		58	0.5	1070x1070	4440	2000x1280x2045	2500x1700x2400
2500	3.87	19.3		59	0.5	1070x1070	5510	2190x1280x2075	2500x1700x2400
2000	3.24	17.8	8	58	0.5	1070x1070	4540	1950x1280x1785	2500x1700x2400
2500	3.87	21.2		59	0.5	1070x1070	5670	2030x1280x1885	2500x1700x2400
3150	4.88	22.4		62	0.4	1070x1070	6560	2430x1280x2155	2900x1700x2500
3500	5.85	24.5		65	0.5	1070x1070	7710	2530x1280x2360	3000x1700x2700

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STANDARD CRT Um=36kV Technical Datasheet CARECO®

HV Voltage: 33kV/34.5kV/35kV
LV Voltage: 400V/415V/420V/433V
Frequency: 50HZ/60HZ

HV tapping: ± 2*2.5% and/or ± 5%
Vector group: Dyn11/ Dyn5/Dyn1/ Yyn0 or others
Material of winding: Copper

Rated Power (kVA)	No-load Loss (kW)	On-load Loss 120°C (kW)	Short Circuit Impedance (%)	Noise (L_{PA}-1) (dB)	No-load Current (%)	Base Frame Q1XQ2 (mm)	Weight (kg)	Outline Dimension (LengthxWidthxHeight) (mm)	Enclosure Dimension (IP20/IP21) (LengthxWidthxHeight) (mm)
200	0.88	3.32	6	56	1.5	670x660	2380	1830x1025x1405	2500x1800x1800
250	0.99	3.80		56	1.3	670x660	2440	1840x1025x1420	2500x1800x1800
315	1.17	4.51		57	1.3	670x660	2480	1800x1090x1550	2500x1800x2000
400	1.37	5.41		57	1.1	820x820	2900	1850x1095x1660	2500x1800x2000
500	1.62	6.65		58	1.1	820x820	3000	1800x1090x1710	2500x1800x2100
630	1.86	7.69		58	1.0	820x820	3510	1860x1100x1800	2500x1800x2100
800	2.16	9.12		60	1.0	1070x1070	3760	1890x1100x1820	2500x1800x2100
1000	2.43	10.40		60	0.75	1070x1070	4440	1890x1110x1820	2600x1800x2100
1250	2.83	12.70		61	0.75	1070x1070	4650	1980x1210x1900	2700x1900x2300
1600	3.24	15.40		61	0.75	1070x1070	6120	2160x1230x1970	2800x1900x2400
2000	3.82	18.20		62	0.75	1070x1070	6720	2160x1380x2070	2900x2000x2500
2500	4.45	21.80		62	0.75	1070x1070	8170	2310x1300x2140	3000x2000x2600
3150	5.62	25.50	8	64	0.75	1070x1070	8990	2410x1320x2195	3100x2000x2600
3500	7.20	27.00		67	0.66	1070x1070	9440	2490x1305x2320	3200x2000x2700

GEAFOL®

HV Voltage: 33kV/34.5kV/35kV
LV Voltage: 400V/415V/420V/433V
Frequency: 50HZ/60HZ

HV tapping: ± 2*2.5% and/or ± 5%
Vector group: Dyn11/ Dyn5/Dyn1/ Yyn0 or others
Material of winding: Aluminum

Rated Power (kVA)	No-load Loss (kW)	On-load Loss 120°C (kW)	Short Circuit Impedance (%)	Noise (L_{PA}-1) (dB)	No-load Current (%)	Base Frame Q1XQ2 (mm)	Weight (kg)	Outline Dimension (LengthxWidthxHeight) (mm)	Enclosure Dimension (IP20/IP21) (LengthxWidthxHeight) (mm)
200	0.88	3.32	6	56	1.5	670x660	1920	1840x1065x1365	2500x1800x1800
250	0.99	3.80		56	1.3	670x660	2140	1860x1030x1430	2500x1800x1800
315	1.17	4.51		57	1.3	670x660	2300	1840x1095x1610	2500x1800x2000
400	1.37	5.41		57	1.1	820x820	2570	1870x1100x1675	2500x1800x2000
500	1.62	6.65		58	1.1	820x820	2820	1870x1100x1780	2500x1800x2100
630	1.86	7.69		58	1.0	820x820	3080	1880x1100x1790	2500x1800x2100
800	2.16	9.12		60	1.0	1070x1070	3430	1940x1110x1830	2500x1800x2100
1000	2.43	10.40		60	0.75	1070x1070	4060	2010x1160x1890	2700x1800x2200
1250	2.83	12.70		61	0.75	1070x1070	4480	2040x1120x1980	2700x1800x2300
1600	3.24	15.40		61	0.75	1070x1070	5690	2150x1130x2190	2800x1800x2400
2000	3.82	18.20		62	0.75	1070x1070	6170	2200x1290x2290	2900x1900x2600
2500	4.45	21.80		62	0.75	1070x1070	7820	2400x1310x2440	3000x2000x2700
3150	5.62	25.50	8	64	0.75	1070x1070	8810	2620x1345x2395	3200x2000x2700
3500	7.20	27.00		67	0.66	1070x1070	9340	2800x1410x2445	3400x2100x2800

Remark: We reserve the right to make technical changes or modify the contents of this catalogue without prior notice.

Power Transformer Technical Datasheet CARECO®

HV Voltage: 33kV/34.5kV/35kV
LV Voltage: 3kV/6kV/6.3kV/6.9kV/11kV
Frequency: 50HZ/60HZ

HV tapping: ± 2*2.5% and/or ± 5%
Vector group: Dyn11/ Dyn5/Dyn1/ Yyn0/Dd0 or others
Material of winding: Copper

Rated Power (kVA)	No-load Loss (kW)	On-load Loss 120°C (kW)	Short Circuit Impedance (%)	Noise (L_{PA}-1) (dB)	No-load Current (%)	Base Frame Q1XQ2 (mm)	Weight (kg)	Outline Dimension (LengthxWidthxHeight) (mm)	Enclosure Dimension (IP20/IP21) (LengthxWidthxHeight) (mm)
4000	7.02	29.40	8	64	0.7	As per actual	13800	3230x1620x2400	4000x2400x2900
5000	8.37	34.90		66	0.6		15200	3300x1705x2555	4000x2500x3100
6300	9.9	40.80		66	0.6		19800	3505x1955x2830	4200x2800x3400
8000	11.3	46.00	9	68	0.5		23200	3755x1985x3000	4500x2800x3500
10000	12.9	55.50		68	0.5		27700	3900x2055x3285	4600x2900x3800
12500	15.7	64.60		70	0.4		32540	4095x2110x3400	4800x2900x3900
16000	19.3	76.00		70	0.4		35500	4105x2290x3780	4800x3100x4300
20000	22.9	85.50	10	74	0.35		41850	4295x2450x3965	5000x3300x4500

GEAFOL®

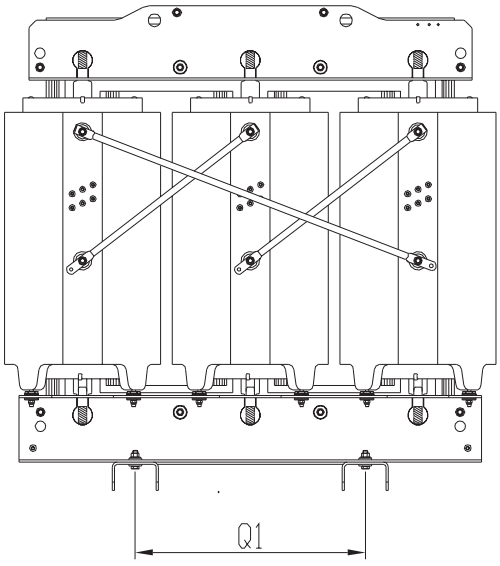
HV Voltage: 33kV/34.5kV/35kV
LV Voltage: 3kV/6kV/6.3kV/6.9kV/11kV
Frequency: 50HZ/60HZ

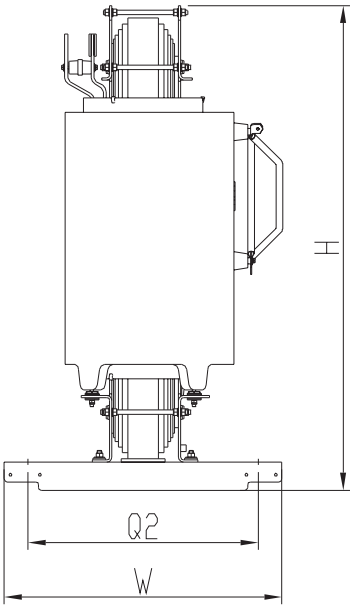
HV tapping: ± 2*2.5% and/or ± 5%
Vector group: Dyn11/ Dyn5/Dyn1/ Yyn0/Dd0 or others
Material of winding: Aluminum

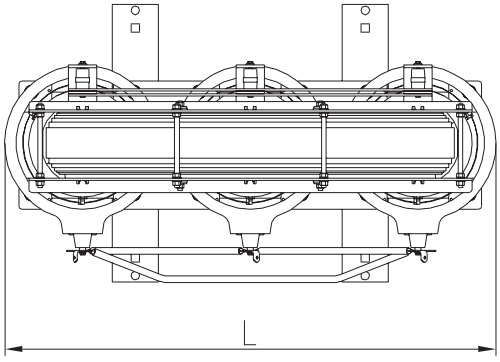
Rated Power (kVA)	No-load Loss (kW)	On-load Loss 120°C (kW)	Short Circuit Impedance (%)	Noise (L_{PA}-1) (dB)	No-load Current (%)	Base Frame Q1XQ2 (mm)	Weight (kg)	Outline Dimension (LengthxWidthxHeight) (mm)	Enclosure Dimension (IP20/IP21) (LengthxWidthxHeight) (mm)
4000	7.02	29.40	8	64	0.7	As per actual	12360	3300x1510x2350	4000x2400x2900
5000	8.37	34.90		66	0.6		13190	3350x1650x2650	4100x2500x3200
6300	9.9	40.80		66	0.6		15550	3450x1955x2850	4200x2800x3400
8000	11.3	46.00	9	68	0.5		19740	3600x2005x3280	4300x2800x3800
10000	12.9	55.50		68	0.5		23630	3755x2105x3395	4500x2900x3900
12500	15.7	64.60		70	0.4		25600	3950x2180x3660	4700x3000x4100
16000	19.3	76.00		70	0.4		28500	4150x2350x3880	4900x3200x4400
20000	22.9	85.50	10	74	0.35		33900	4350x2580x4065	5100x3400x4600

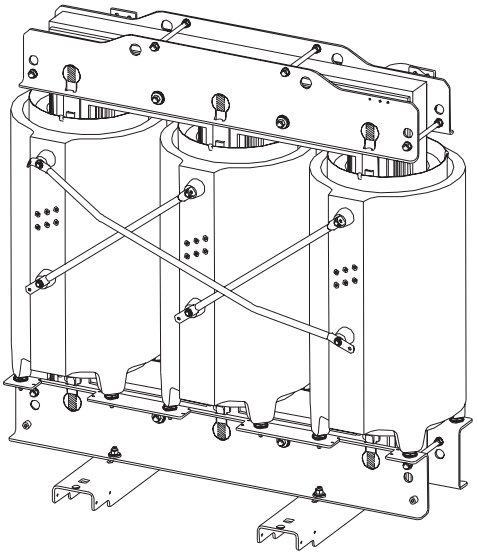
Remark: We reserve the right to make technical changes or modify the contents of this catalogue without prior notice. For rating above 20000kVA pls. contact us for techincal data

Outline of standard CRT









CUSTOMIZED PRODUCTS

CRT with on-load tap changer

CRT with on-load tap changer is available up to rating of 30MVA. The rated voltage extends to 36KV, and the maximum impulse voltage is 170KV. Such transformer is mainly for occasions demanding high in power supply, such as modern industrial plants, hospitals, office and apartment blocks and shopping centers.

Rectifier transformer

This kind of transformer is designed for the special demands of thyristor converter or diode rectifier system.

Effects from such equipment and additional structure requirements:

- Increased load caused by harmonic currents
- Balancing of phase currents in multiple winding system (e.g. 12-pulse system)
- Short-time overload factor reaches 2.5

Dual low voltage transformer

This kind of transformer, whose primary and secondary side are both low voltage, is usually used as drilling transformer, propulsion transformer or lighting transformer on offshore drilling platform or vessel. It can also be used as an isolation transformer when electrical safety is highly required.

Water-cooled transformer

The water circuiting in the enclosure facilitates cooling of the air, thereby improve the heat radiation capacity of the transformer. The structure of this transformer is compact, it is mainly used in vessels and other places where the size and weight of the transformer is limited.

- Specially design for drilling platform, tunnel machine, wind power and marine equipment, usually installed in places with limited space and frequent vibration.
- It consists of a dry type transformer and IP44 protection shell, the main components also contain the water cooled heat exchangers and motors.
- Overload capacity up to 50%, weight approx. 20% lower, heat transfer to the environmental room max. 10% of the total losses only, cooling water takes away the rest of the heat.

Dry-type transformer for offshore wind power

This kind of transformer technically matches the requirements for offshore use, it is small in size, light in weight, low in temperature rise, strong in overload capability, vibration-resistant, anti-corrosion and equipped with enclosure with high defend grade.

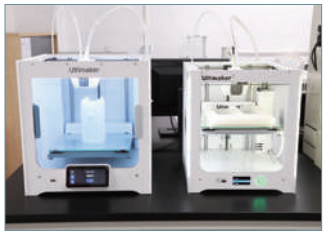
Only part of the customized products are listed above. Customized products of Siemens Energy CRT are also including reactor and so on. For further requirements, please contact us.

TESTING CAPABILITY OF LABORATORY

Siemens transformer (Guangzhou) Co., Ltd. has the only CRT R&D center except Germany, and also has the test station with the advanced equipments. A series of tests for raw material and transformer can be carried out by them.

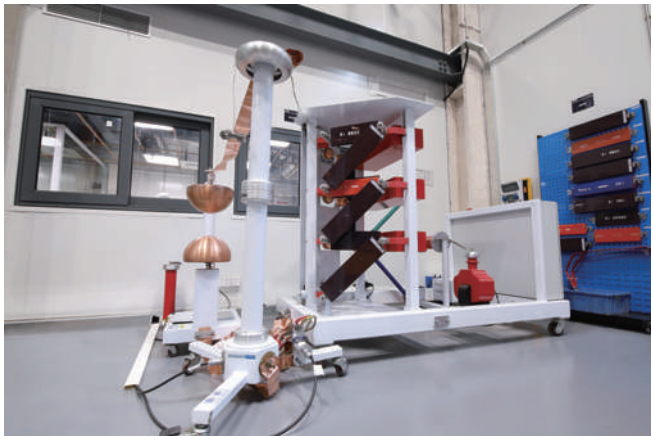
R&D center has a large quantity of testing equipments to ready for testing for raw materials of transformers. The equipments include Mettler Toledo DSC1 from Switzerland, MTS Universal testing machine from USA, Salt Spray test chamber, SST-500 Magnetic Loss Tester of silicon steel sheet, HVS-5 Micro Hardness Device Vickers, 3D printer and so on. Examinations carried out by these equipments include the temperature of glass transition, compressive and tensile strength of material, anti-salt spry corrosion ability of panel, loss of silicon steel, quality of superficial coating. These equipments provide an effective guarantee for the quality of our products.

Switzerland HAEFELY transformer test system, Lightning impulse test system etc, which are advanced equipments of world, are equipped in the test station, all routing or type test of CRT specified in GB, IEC or ANSI standards can be performed by these equipments. And some special tests can also be performed in factory.



3D Printer

Mettler Toledo DSC1



Lighting Impulse test system

MTS Universal testing machine

PRODUCT REFERENCE

8 units Siemens Energy rectified transformer used on the luxury cruise ship "Grand princess"

Siemens Energy transformer on top of the Alps Mountain.

Siemens Energy transformer in deepwater drilling platform.

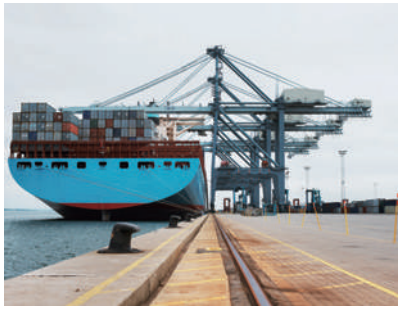
Siemens Energy transformer in wind power.

Siemens Energy transformers in several large data centers all over the world.

Siemens Energy transformer used in Ataturk airport.

Siemens Energy transformer in the subway.

Siemens Energy transformers used in semi-conductor industry.



Siemens Energy transformers in cranes at the harbour.

Siemens Energy transformer in MGM hotel in Macau.

CERTIFICATES


BUREAU VERITAS
Certification

SIEMENS TRANSFORMER (GUANGZHOU) CO., LTD.

ISO 9001:2015

Scope of certification

DESIGN, PRODUCTION AND SALES OF POWER TRANSFORMER AND DRY TYPE TRANSFORMER


TÜVNORD

CERTIFICATE

Siemens Energy Global GmbH & Co. KG

Please see scope annex 1


TÜVNORD

ANNEX 2


intertek

ASTA CERTIFICATE OF COMPLETE TYPE TESTS


intertek

ASTA CERTIFICATE OF TYPE TEST


intertek

ASTA CERTIFICATE OF COMPLETE TYPE TESTS

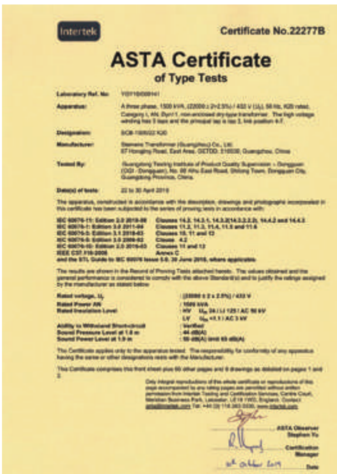

intertek

ASTA CERTIFICATE

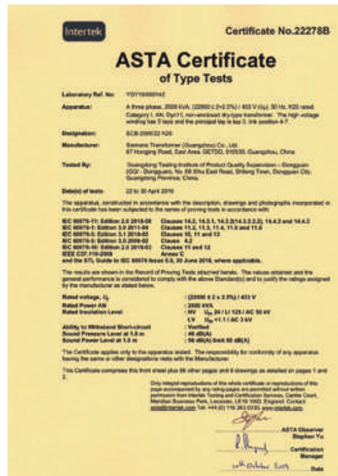
VERIFICATION OF TEST


TEST REPORT

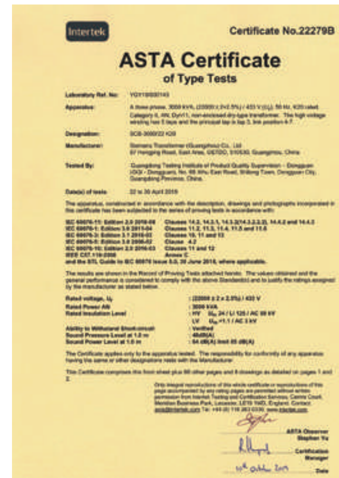

TEST REPORT


Intertek Certificate No.22277B

ASTA Certificate
of Type Tests


Intertek Certificate No.22278B

ASTA Certificate
of Type Tests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ASTA Certificate
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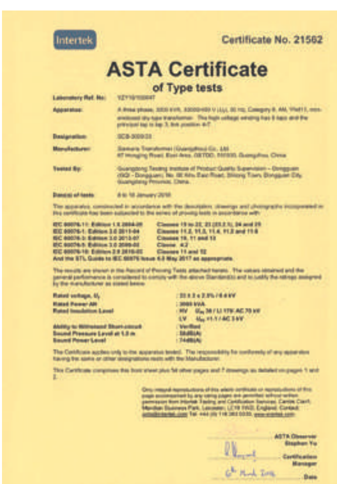
Intertek Certificate No. 21562

ASTA Certificate
of Type tests


ilac-MRA CNAS

China National Accreditation Service for Conformity Assessment
LABORATORY ACCREDITATION CERTIFICATE
(Registration No. CNAS L17866)

Siemens Transformer (Guangzhou) Co., Ltd. Distribution Transformer Testing Center

is accredited in accordance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence to undertake the service described in the schedule attached to this certificate.

The scope of accreditation is detailed in the attached schedule bearing the same registration number as above. The schedule forms an integral part of this certificate.


Test Report


CERTIFICATE OF COMPLIANCE

Certificate Number 20150801-E350045
Report Reference E350045-20150729
Issue Date 2015-AUGUST-01

Issued to: SIEMENS AG
Power Transmission Div
Transf E T Tr Em De Ti
Hegelstr 20
73230 Kirchheim Unter Teck GERMANY

This is to certify that representative samples of: TRANSFORMERS, DISTRIBUTION, DRY TYPE, OVER 600 VOLTS
Refer addendum page for models

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 1562 Transformers, Distribution, Dry-Type-Over
CSA C22.2 NO. 47-13 AIR-COOLED TRANSFORMER (DRY TYPE)

Additional Information: See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

Page 1 of 2


AMERICAN BUREAU OF SHIPPING


DET NORSKE VERITAS
CERTIFICATE FOR ELECTRIC TRANSFORMER

If you have any question about distribution transformer, please contact us.

Welcome to contact us: 020-62663488/427

Siemens Energy Transformer (Guangzhou) Co., Ltd.
Address: No. 26 Yongsheng Road, Huangpu District , Guangzhou P.R.China

2022.11.V2