

西门子能源树脂浇注式 (干式) 变压器

Siemens Energy Cast-resin (Dry-type) Transformer



广州西门子能源变压器有限公司

Siemens Energy Transformer (Guangzhou) Co., Ltd.

广州西门子能源变压器有限公司是一家大型中德合资企业，西门子能源占总股份的 63%，广州工业投资控股集团有限公司占股份的 37%，是全球技术领先的变压器制造厂商之一。公司总资产超过 25 亿元人民币，是广东省装备制造业重点培育企业之一，连续多年获得“中国电气工业 100 强”荣誉称号。

公司成立于 1998 年，占地面积约 88,000 平方米，拥有员工 700 多名。我们致力于为电力系统、工业以及楼宇用户提供 110kV~1000kV 油浸式交流电力变压器、 $\pm 1100\text{kV}$ 及以下高压直流换流变压器，20MVA/35kV 及以下树脂浇注式变压器产品及相关服务，是国内为数不多的、可以在同一个工厂生产各电压等级变压器的公司之一。自 1999 年 9 月 15 日投产以来，公司已为中国和海外客户提供了大量电力变压器和大量配电变压器，并赢得了良好的声誉。

配变新工厂于 2021 年 7 月 15 日正式投入使用，采用“工业 4.0”标准进行设计运营，打造西门子能源在全球配电变压器领域的样板工厂，在精益生产的基础上，整体流程向智能化和自动化进行高度整合，率先在配电变压器制造领域实现标准化智能作业和数字化制造。

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 88,000m² with more than 700 employees. We provide power transformers from 110kV to 1000kV, HVDC converter transformers up to $\pm 1100\text{kV}$ 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.



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产品结构图

PRODUCT STRUCTURE

1 三相心柱

由晶粒取向低损耗的硅钢片制成。双组份的油漆特别用于恶劣的环境。

Three-limb core

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

2 低压绕组

箔式绕组。匝间用绝缘箔缠绕，紧紧的粘在一起。

LV winding

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

3 高压绕组

由真空浇注的单个箔式线饼组成。

HV winding

Consisting of vacuum-potted single foil-type coils.

4 绝缘筒

加强绝缘，提高变压器散热能力。

Insulation cylinder

Reinforce insulation, improve the heat dissipation of transformer.

5 高压端子

可根据变电站情况设计最优布置方案。高压分接片可在断电情况下调节以适应系统电压。

HV terminals

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

6 低压端子

正常布置：上部

特殊布置：下部，根据客户要求

LV terminals

Standard arrangement: top

Customization: bottom

7 垫块

隔绝铁心和线圈的机械振动，从而降低噪音的发散。

Coil support system

To isolate core and winding from mechanical vibrations, reduce noise emission.



8 夹件和轮架

由钢板制作，激光加工，高精度。滚轮可以横向和纵向旋转。

Clamping frame and truck

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

备注：

- 滚轮和 Sensformer 非常规配置
- 西门子能源商标由西门子公司授权使用。

9 Sensformer®

能够实时读取绕组温度、绕组电流，提供过载警报、GPS 定位功能，安全加密的网络信息平台。

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.

产品特点

PRODUCT FEATURES

从 1965 年起，西门子能源树脂浇注变压器已经成功运行。全球超过 150,000 台西门子能源树脂浇注变压器通过配电或者整流系统中的安全运行证明了自身的质量。

西门子能源树脂浇注变压器的环氧树脂、固化剂、绝缘材料等主要材料采用进口品牌，更好的保证了其高品质。西门子能源树脂浇注变压器集高性能、低损耗优点于一身，是工业应用领域的首选品牌。

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.

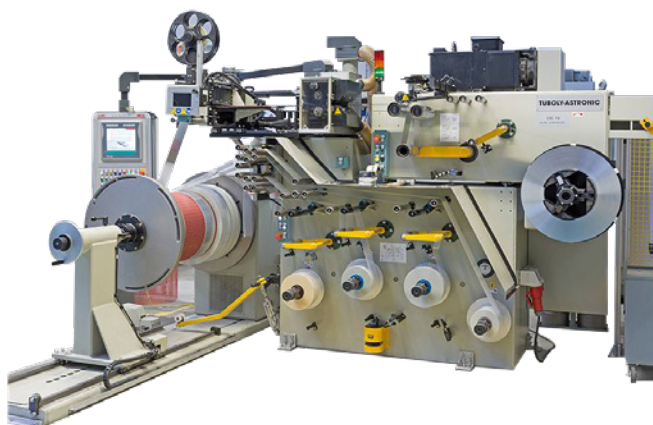
Epoxy resin, curing agent, insulating materials and other major materials of Siemens Energy CRT are international brand for quality assurance. Siemens Energy CRT is the preferred choice in industrial field providing with high performance and low losses.

高压箔式绕组

高压绕组由铜箔（或铝箔）和优质的绝缘箔绕制。成型线圈放在加热模具中用特别配比的树脂在真空罐中浇注。真空浇注排除了绕组中的气体从而确保变压器的低局放。因为导体与浇注树脂的热膨胀系数非常相近，所以由负载变化引起的热应力差被控制在最小程度从而提高了绕组的抗开裂能力。与浸渍产品相比，其过载能力更强。

HV foil winding

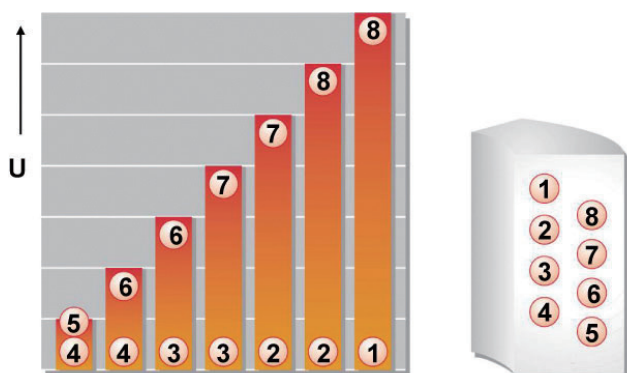
The high-voltage windings twine together by copper foil (or aluminum foil) interleaved with high-grade insulating foils. The coils are placed in a heated mold and are potted in a vacuum furnace with specially blended epoxy resins. The vacuum casting process excludes the air in the windings to ensure 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 高压箔绕机
TUBOLY HV winding machine

与线绕绕组相比，箔式绕组更优越

箔式绕组将简单的技术与高度的电气安全性结合在一起。与其它类型的绕组相比，绝缘承受更小的电气应力。在传统的圆导线绕组中，层间电压达到几倍的匝间电压。箔式绕组的一层只有一匝，因此电气应力保持恒定，绕组能够承受很高的工频电压与冲击电压。



圆线绕组

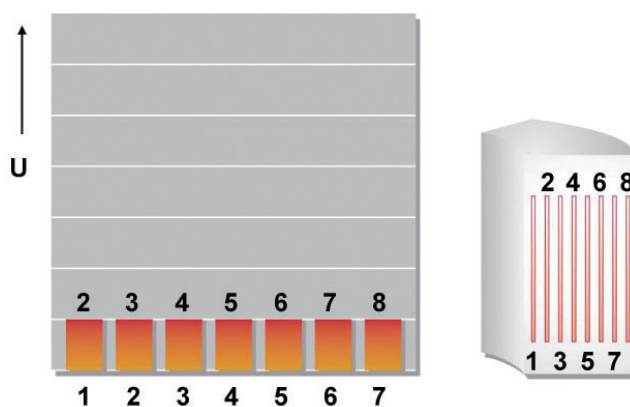
层间电压达到几倍的匝间电压

Round-wire winding

The interlayer voltage add up to several times of the interturn voltage.

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.



箔式绕组

层间电压等于匝间电压

Foil winding

The interlayer voltage equal to the interturn voltage.

真空浇注

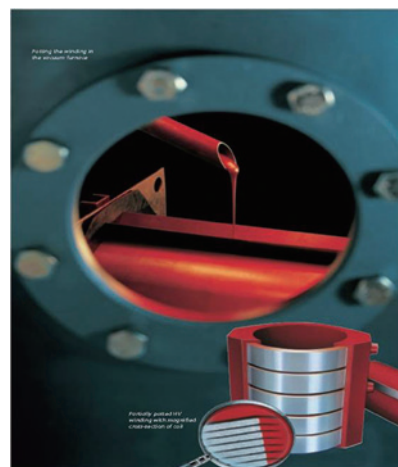
绕组在自动化的真空浇注设备中按特定固化温度曲线浇注成型。采取卧式浇注工艺，更有利于气体排出。设备实时精确控制树脂组分配比和浇注真空度，杜绝一切浇注质量隐患。与浸渍产品相比，其机械强度和抗短路能力更强。



海德里希真空浇注设备
HEDRICH vacuum casting machine

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.



低压箔式绕组

低压绕组由铜箔（或铝箔）绕制而成，层间绝缘所受应力小，绝缘采用环氧树脂预浸布。绕制好的线圈在固化炉中按曲线固化成形，均匀粘合而且防潮，这样设计的绕组，在短路情况下表现出良好的动稳定性。

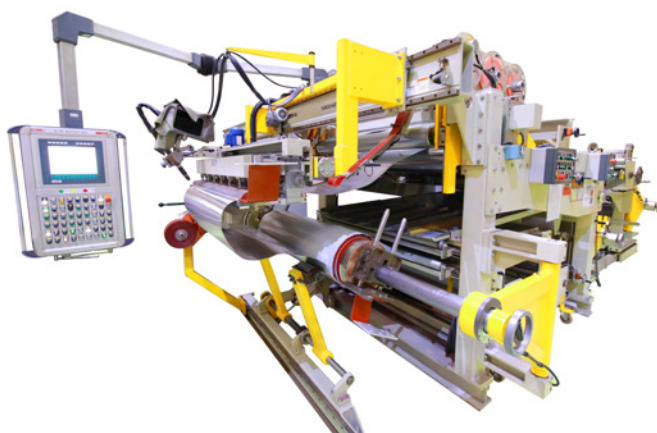


低压线圈成品
Finished LV winding



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.



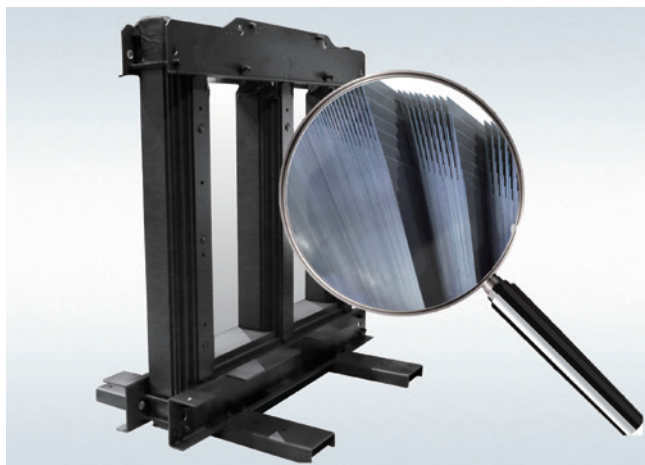
TUBOLY 低压箔绕机
TUBOLY LV winding machine

步进阶梯型叠片

铁芯以优质的冷轧晶粒取向硅钢片为原材料，使用最先进的德国乔格公司自动剪切线剪切，使得成型硅钢片尺寸准确、毛刺小。铁芯堆叠采用定位叠片及不叠上铁轭技术，使得铁芯的空载损耗和空载电流进一步降低。这种结构有效的降低了噪音。

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.



步进阶梯型叠积
Step lap lamination

外壳

推荐室内安装，把树脂浇注配电变压器装在电气室或不同类型的金属板外壳内。变压器仅需注意接线端子或绕组表面的带电接触、阳光直射及防水。变压器可采用各种不同防护等级的户内外壳（推荐采用 IP20, IP21），单独放置或者与高低压开关柜一起放置组成紧凑型变电站。如果安装地点通风不畅，需采用风机或其它方式保持通风。变压器也可以安装在户外，采用 IP23 或以上的防护等级。



Enclosures

CRT is recommended to be installed indoor, for example in electric room or in various metal 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 IP23 enclosure or above.

IP20 钢板喷塑外壳
IP20 Steel Enclosures

温度监控

每台浇注式配电变压器配备一个温度指示器，在低压绕组中安装三个温度传感器。PT100 传感器用于检测绕组的最高温度。温度指示器能够输出报警、跳闸信号来保护变压器。特殊型号的温度指示器（RS485, 4~20mA）可根据客户需求提供。

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, 4~20mA) is as request of customer.

过载能力

安装冷却风机后，西门子能源树脂浇注式变压器可以过载 40%（相应的增大了阻抗电压与负载损耗）。只要在过载时间内没有超过线圈最高温度（取决于初始负载和周围环境温度），短时过载不会对变压器造成影响。

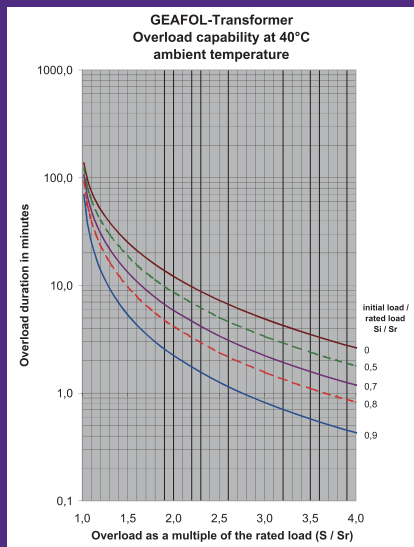
Overload capability

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).

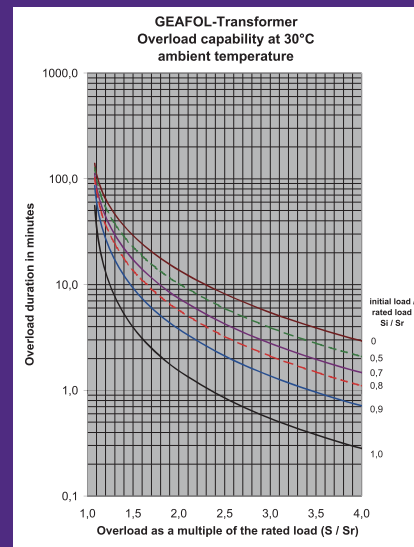


冷却风机
Cooling fans

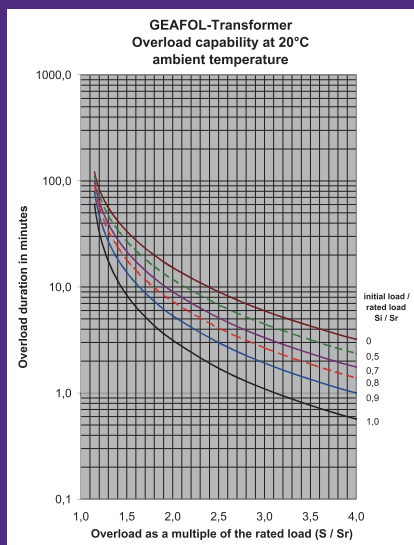
西门子能源树脂浇注配电变压器过载曲线（不带风机）
Overload curve of Siemens Energy CRT (without cooling fans)



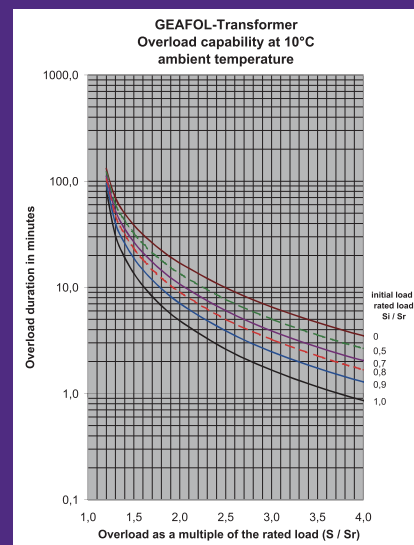
Si = initial load
Sr = rated load
S = load



Si = initial load
Sr = rated load
S = load



Si = initial load
Sr = rated load
S = load



Si = initial load
Sr = rated load
S = load

防火安全

西门子能源树脂浇注式配电变压器只使用阻燃与自熄材料，不使用额外的材料，比如三水氧化铝等会影响树脂浇注体机械稳定性的材料。电气故障造成的内部电弧与外部火灾不会导致变压器爆炸或燃烧。扑灭火源后，变压器会自熄。这种设计获得了许多国家的消防机构认可，可用于居民楼等类型的建筑。经过多次试验证明变压器的燃烧残渣对环境没有危害。



燃烧试验
Flammability test

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.

西门子能源树脂浇注配电变压器可满足以下保护等级的要求：

- 环境等级 E4
- 气候等级 C4
- 防火等级 F1

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

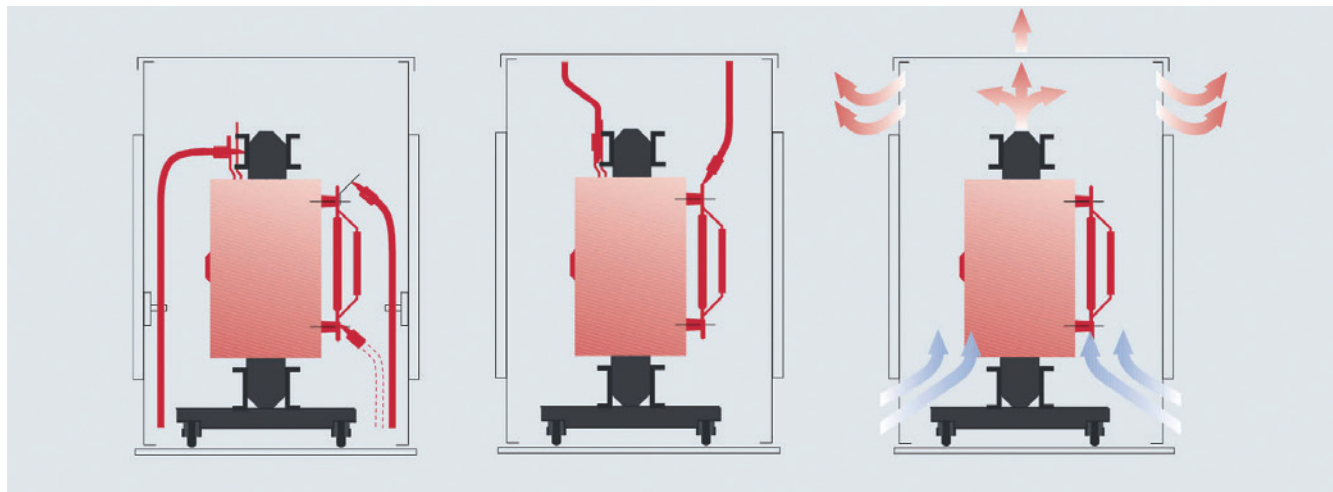
- Environmental category E4
- Climatic category C4
- Fire category F1

接线

除了标准的开放式端子外，雷电冲击达到 170kV 的高压侧还可采用带肘形插头的插入式套管。一次侧电缆通常经过下面的电缆沟后与变压器连接，也可从上部与变压器连接。二次侧可采用多根绝缘电缆或母排连接。特殊情况可采用软连接降低噪音。推荐采用以下连接方式：

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:



产品标准

PRODUCT STANDARDS

西门子能源树脂浇注式配电变压器可以按照 GB、IEC 或 ANSI 系列标准提供。

Siemens Energy CRT can be produced according to GB, IEC or ANSI standards.

常规树脂浇注式干式变压器参数

ELECTRICAL DATA OF STANDARD CRT

10kV 13 型树脂浇注式配电变压器电气参数（等同于 GB20052-2024 版本能效 3 级的损耗水平）

Electrical data of 10kV series 13 CRT (Equal to the loss level of NX3 of GB20052-2024)

额定容量 Rated Power (kVA)	线圈材料 Winding Material	高压 HV (kV)	高压分接范围 Tapping of HV	低压 LV (kV)	连接组 标号 Symbol	空载损耗 No-load Loss (kW)	120°C 负载损耗 On-load Loss 120°C (kW)	短路阻抗 Short Circuit Impedance (%)	* 噪声 (L _{PA} -1) (dB)	空载电流 No-load Current (%)
630	铜或铝 Copper or Aluminum	6 6.3 6.6 10 10.5 11	± 5% ± 2 × 2.5%	0.4	Dyn11 Yyn0	0.965	5.29	4	52	0.6
630						0.935	5.36		52	0.6
800						1.09	6.26		53	0.6
1000						1.27	7.31		53	0.6
1250						1.50	8.72		54	0.5
1600						1.76	10.55		54	0.5
2000						2.19	13.00		55	0.5
2500						2.59	15.45		55	0.5

* 以上参数参照 JB/T 3837-2016, 技术性能偏差符合 GB1094.1-2013

Above technical data refer to JB/T 3837-2016, tolerance is in accordance with GB1094.1-2013

注：以上数据仅供参考，公司保留数据变动的权利。

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

以下 NX 系列产品参数参照 GB20052-2024
Below parameter of NX series products refer to GB20052-2024

10kV NX3 型树脂浇注式配电变压器电气参数
Electrical data of 10kV NX3 CRT

额定容量 Rated Power (kVA)	线圈材料 Winding Material	高压 HV (kV)	高压 分接范围 Tapping of HV	低压 LV (kV)	连接组 标号 Symbol	空载损耗 No-load Loss (kW)	120℃ 负载 损耗 On-load Loss 120℃ (kW)	短路阻抗 Short Circuit Impedance (%)	* 噪声 Noise (L _{PA} -1) (dB)	空载电流 No-load Current (%)
100	铜或铝 Copper or Aluminum	10 10.5 11	± 5% ± 2 × 2.5%	0.4	Dyn11 Yyn0	0.320	1.570	4	48	1.5
125						0.375	1.850		48	1.3
160						0.430	2.130		49	1.3
200						0.495	2.530		49	1.1
250						0.575	2.760		50	1.1
315						0.705	3.470		50	1.0
400						0.785	3.990		51	1.0
500						0.930	4.880		51	1.0
630						1.070	5.880	6-8	52	0.85
630						1.040	5.960		52	0.85
800						1.215	6.960		53	0.6
1000						1.415	8.130		53	0.6
1250						1.670	9.690		54	0.5
1600						1.960	11.730		54	0.5
2000						2.440	14.450		55	0.5
2500						2.880	17.170		55	0.5

10kV NX2 型树脂浇注式配电变压器电气参数
Electrical data of 10kV NX2 CRT

额定容量 Rated Power (kVA)	线圈材料 Winding Material	高压 HV (kV)	高压 分接范围 Tapping of HV	低压 LV (kV)	连接组 标号 Symbol	空载损耗 No-load Loss (kW)	120℃ 负载 损耗 On-load Loss 120℃ (kW)	短路阻抗 Short Circuit Impedance (%)	* 噪声 Noise (L _{PA} -1) (dB)	空载电流 No-load Current (%)
100	铜或铝 Copper or Aluminum	10 10.5 11	± 5% ± 2 × 2.5%	0.4	Dyn11 Yyn0	0.270	1.415	4	47	1.5
125						0.320	1.665		47	1.3
160						0.365	1.915		48	1.3
200						0.420	2.275		48	1.1
250						0.490	2.485		49	1.1
315						0.600	3.125		49	1.0
400						0.665	3.590		50	1.0
500						0.790	4.390		50	1.0
630						0.910	5.290	6-8	51	0.85
630						0.885	5.365		51	0.85
800						1.035	6.265		52	0.6
1000						1.205	7.315		52	0.6
1250						1.420	8.720		53	0.5
1600						1.665	10.555		53	0.5
2000						2.075	13.005		54	0.5
2500						2.450	15.445		54	0.5

注：以上数据仅供参考，公司保留数据变动的权利。
Comments: We reserve the right to make technical changes or modify the contents of this catalogue without prior notice.

10kV NX1 型树脂浇注式配电变压器电气参数

Electrical data of 10kV NX1 CRT

额定容量 Rated Power (kVA)	线圈材料 Winding Material	高压 HV (kV)	高压分接范围 Tapping of HV	低压 LV (kV)	连接组 标号 Symbol	空载损耗 No-load Loss (kW)	120°C 负载 损耗 On-load Loss 120°C (kW)	短路阻抗 Short Circuit Impedance (%)	* 噪声 Noise (L _{PA} -1) (dB)	空载电流 No-load Current (%)
100	铜或铝 Copper or Aluminum	10 10.5 11	± 5% ± 2 x 2.5%	0.4	Dyn11 Yyn0	0.230	1.415	4	46	1.5
125						0.270	1.665		46	1.3
160						0.310	1.915		47	1.3
200						0.360	2.275		47	1.1
250						0.415	2.485		48	1.1
315						0.510	3.125		48	1.0
400						0.570	3.590		49	1.0
500						0.670	4.390		49	1.0
630						0.775	5.290	6-8	50	0.85
630						0.750	5.365		50	0.85
800						0.875	6.265		51	0.6
1000						1.020	7.315		51	0.6
1250						1.205	8.720		52	0.5
1600						1.415	10.555		52	0.5
2000						1.760	13.005		53	0.5
2500						2.080	15.445		53	0.5

20kV 树脂浇注式配电变压器电气参数

Electrical data of 20kV CRT

额定容量 Rated Power (kVA)	线圈材料 Winding Material	高压 HV (kV)	高压分接范围 Tapping of HV	低压 LV (kV)	连接组 标号 Symbol	13 型空载损耗 Level 13 No-load loss (kW)	120°C 负载 损耗 On-load Loss 120°C (kW)	短路阻抗 Short Circuit Impedance (%)	* 噪声 Noise (L _{PA} -1) (dB)	空载电流 No-load Current (%)
200	铜或铝 Copper or Aluminum	20 22 24	± 5% ± 2x2.5%	0.4	Dyn11 Yyn0	0.584	2.65	6	50	1.5
250						0.672	3.08		52	1.3
315						0.776	3.67		52	1.3
400						0.920	4.36		52	1.1
500						1.08	5.21		52	1.1
630						1.22	6.16		53	1.0
800						1.40	7.43		53	0.6
1000						1.66	8.80		53	0.6
1250						1.90	10.4		54	0.6
1600						2.23	12.4		56	0.6
2000						2.59	14.7		58	0.5
2500						3.10	17.4		59	0.5
2000						2.59	16.0	8	58	0.5
2500						3.10	19.1		59	0.5

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35kV 树脂浇注式配电变压器电气参数
Electrical data of 35kV CRT

额定容量 Rated Power (kVA)	线圈材料 Winding Material	高压 HV (kV)	高压分接范围 Tapping of HV	低压 LV (kV)	连接组 标号 Symbol	13 型空载损耗 Level 11 No-load loss (kW)	120°C 负载损耗 On-load Loss 120°C (kW)	短路阻抗 Short Circuit Impedance (%)	* 噪声 Noise (L _{PA} -1) (dB)	空载电流 No-load Current (%)
200	铜或铝 Copper or Aluminum	35 36 37 38.5	± 5% ± 2x2.5%	0.4	Dyn11 Yyn0	0.704	2.99	6	56	1.5
250						0.792	3.42		56	1.3
315						0.936	4.06		57	1.3
400						1.10	4.87		57	1.1
500						1.30	5.99		58	1.1
630						1.49	6.92		58	1.0
800						1.73	8.21		60	1.0
1000						1.94	9.36		60	0.75
1250						2.26	11.4		61	0.75
1600						2.59	13.9		61	0.75
2000						3.06	16.38		62	0.75
2500						3.56	19.62		62	0.75

35kV 树脂浇注式电力变压器电气参数
Electrical data of 35kV power CRT

额定容量 Rated Power (kVA)	线圈材料 Winding Material	高压 HV (kV)	高压分接范围 Tapping of HV	低压 LV (kV)	连接组 标号 Symbol	13 型空载损耗 Level 11 No-load loss (kW)	120°C 负载损耗 On-load Loss 120°C (kW)	短路阻抗 Short Circuit Impedance (%)	* 噪声 Noise (L _{PA} -1) (dB)	空载电流 No-load Current (%)
4000	铜或铝 Copper or Aluminum	35 36 37 38.5	± 5% ± 2x2.5%	3.15 6 6.3 10 10.5 11	Dyn11 Yd11	5.62	26.5	8	64	0.70
5000						6.69	31.4		66	0.60
6300						7.92	36.7		66	0.60
8000						9.04	41.4	9	68	0.50
10000						10.3	49.9		68	0.50
12500						12.6	58.1		70	0.40
16000						15.4	68.4		70	0.40
20000						18.3	76.9	10	74	0.35

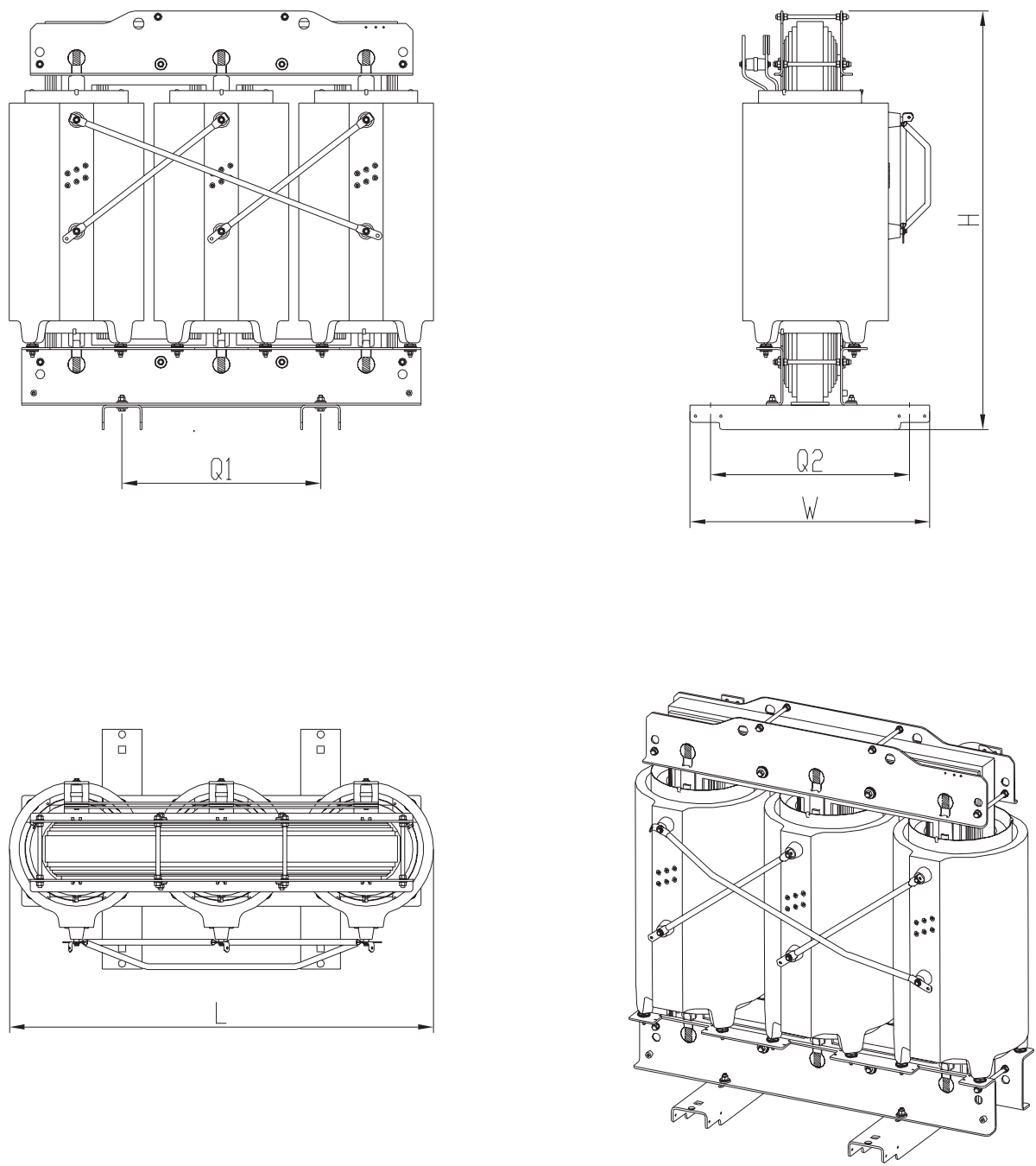
35kV 树脂浇注式有载调压电力变压器电气参数
Electrical data of 35kV on-load tap changer CRT

额定容量 Rated Power (kVA)	线圈材料 Winding Material	高压 HV (kV)	高压分接范围 Tapping of HV	低压 LV (kV)	连接组 标号 Symbol	13 型空载损耗 Level 11 No-load loss (kW)	120°C 负载损耗 On-load Loss 120°C (kW)	短路阻抗 Short Circuit Impedance (%)	* 噪声 Noise (L _{PA} -1) (dB)	空载电流 No-load Current (%)
4000	铜或铝 Copper or Aluminum	35 36 37 38.5	± 4 × 2.5%	6 6.3 10 10.5 11	Dyn11 Yd11	5.90	27.4	8	64	0.70
5000						6.98	32.5		66	0.60
6300						8.24	37.6		66	0.60
8000						9.44	42.8	9	68	0.50
10000						10.8	51.4		68	0.50
12500						13.1	59.9		70	0.40
16000						16.2	70.4		70	0.40
20000						19.0	79.2	10	74	0.35

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

常规树脂浇注式配电变压器外形图
Outline of standard CRT



10kV NX3 树脂浇注式配电变压器机械参数

Mechanical data of 10kV NX3 CRT

额定容量 Rated Power (kVA)	线圈材料 Winding Material	底座 Base Frame Q1 x Q2 (mm)	重量 Weight (kg)	外形尺寸 (长 x 宽 x 高) Outline Dimension (Length x Width x Height) (mm)	外壳尺寸 (IP20) (长 x 宽 x 高) Enclosure Dimension (IP20) (Length x Width x Height) (mm)
100	铜 Copper	520x520	1100	1205x720x980	1600x1200x1600
125		520x520	1150	1235x735x1060	1600x1200x1600
160		520x520	1220	1235x745x1090	1600x1200x1600
200		520x520	1290	1245x755x1100	1600x1200x1700
250		520x520	1370	1255x760x1120	1600x1200x1700
315		670x660	1450	1265x820x1150	1600x1200x1700
400		670x660	1570	1270x820x1190	1600x1200x1700
500		670x660	1810	1260x820x1205	1600x1200x1700
630		670x660	1980	1300x820x1230	1600x1200x1700
800		670x660	2340	1350x825x1240	1800x1300x1800
1000		820x820	2750	1405x990x1290	1800x1300x1800
1250		820x820	3200	1505x 990x1310	2000x1400x2000
1600		820x820	3900	1555x990x1445	2000x1400x2000
2000		1070x1070	4650	1615x1280x1515	2200x1600x2200
2500		1070x1070	5670	1705x1280x1665	2200x1600x2200
100	铝 Aluminum	520x520	1010	1245x720x1100	1600x1200x1700
125		520x520	1050	1255x735x1120	1600x1200x1700
160		520x520	1120	1260x760x1190	1600x1200x1700
200		520x520	1180	1265x765x1220	1600x1200x1700
250		520x520	1270	1270x765x1280	1600x1200x1700
315		670x660	1340	1275x820x1320	1600x1200x1700
400		670x660	1470	1280x820x1395	1700x1200x1800
500		670x660	1560	1290x820x1405	1700x1200x1800
630		670x660	1880	1310x820x1440	1700x1200x1800
800		670x660	2140	1395x835x1550	1800x1300x1800
1000		820x820	2550	1435x990x1630	2000x1400x2000
1250		820x820	2900	1505x990x1690	2000x1400x2000
1600		820x820	3770	1640x990x1740	2200x1400x2200
2000		1070x1070	4250	1730x1280x2015	2200x1600x2400
2500		1070x1070	5270	1835x1280x2030	2200x1600x2400

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10kV NX2 树脂浇注式配电变压器机械参数

Mechanical data of 10kV NX2 CRT

额定容量 Rated Power (kVA)	线圈材料 Winding Material	底座 Base Frame Q1 x Q2 (mm)	重量 Weight (kg)	外形尺寸 (长 x 宽 x 高) Outline Dimension (Length x Width x Height) (mm)	外壳尺寸 (IP20) (长 x 宽 x 高) Enclosure Dimension (IP20) (Length x Width x Height) (mm)
100	铜 Copper	520x520	1250	1225x730x1065	1600x1200x1600
125		520x520	1320	1235x745x1070	1600x1200x1600
160		520x520	1380	1245x755x1100	1600x1200x1600
200		520x520	1450	1255x765x1135	1600x1200x1700
250		520x520	1510	1265x760x1170	1600x1200x1700
315		670x660	1600	1275x820x1210	1600x1200x1700
400		670x660	1730	1300x820x1205	1600x1200x1700
500		670x660	2010	1225x820x1225	1600x1200x1700
630		670x660	2220	1310x820x1245	1600x1200x1700
800		670x660	2480	1375x830x1280	1800x1300x1800
1000		820x820	2930	1435x990x1340	1800x1300x1800
1250		820x820	3350	1460x990x1345	2000x1400x2000
1600		820x820	4050	1505x990x1470	2000x1400x2000
2000		1070x1070	4850	1600x1280x1535	2200x1600x2200
2500		1070x1070	5880	1650x1280x1670	2200x1600x2200
100	铝 Aluminum	520x520	1120	1275x730x1275	1600x1200x1700
125		520x520	1190	1290x745x1325	1600x1200x1700
160		520x520	1250	1300x760x1355	1600x1200x1700
200		520x520	1320	1310x775x1375	1600x1200x1700
250		520x520	1400	1315x775x1395	1600x1200x1700
315		670x660	1500	1330x820x1410	1600x1200x1700
400		670x660	1610	1350x820x1420	1700x1200x1800
500		670x660	1720	1360x820x1445	1700x1200x1800
630		670x660	2000	1370x830x1460	1700x1200x1800
800		670x660	2300	1440x840x1555	1800x1300x1800
1000		820x820	2750	1505x990x1600	2000x1400x2000
1250		820x820	3060	1540x990x1725	2000x1400x2000
1600		820x820	3740	1710x990x1860	2200x1400x2200
2000		1070x1070	4460	1735x1280x2040	2200x1600x2400
2500		1070x1070	5590	1870x1280x2075	2200x1600x2400

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10kV NX1 树脂浇注式配电变压器机械参数

Mechanical data of 10kV NX1 CRT

额定容量 Rated Power (kVA)	线圈材料 Winding Material	底座 Base Frame Q1 x Q2 (mm)	重量 Weight (kg)	外形尺寸 (长 x 宽 x 高) Outline Dimension (Length x Width x Height) (mm)	外壳尺寸 (IP20) (长 x 宽 x 高) Enclosure Dimension (IP20) (Length x Width x Height) (mm)
100	铜 Copper	520x520	1320	1235x735x1135	1600x1200x1600
125		520x520	1380	1240x750x1155	1600x1200x1600
160		520x520	1450	1250x760x1175	1600x1200x1600
200		520x520	1500	1260x770x1190	1600x1200x1700
250		520x520	1590	1275x780x1200	1600x1200x1700
315		670x660	1690	1285x820x1230	1600x1200x1700
400		670x660	1840	1300x820x1235	1600x1200x1700
500		670x660	2190	1225x820x1235	1600x1200x1700
630		670x660	2390	1315x820x1275	1600x1200x1700
800		670x660	2620	1400x835x1295	1800x1300x1800
1000		820x820	3110	1460x990x1355	1800x1300x1800
1250		820x820	3540	1450x990x1365	2000x1400x2000
1600		820x820	4260	1515x 990x1470	2000x1400x2000
2000		1070x1070	5030	1600x1280x1535	2200x1600x2200
2500		1070x1070	6180	1675x1280x1705	2200x1600x2200
100	铝 Aluminum	520x520	1180	1295x735x1310	1600x1200x1700
125		520x520	1260	1310x755x1335	1600x1200x1700
160		520x520	1330	1320x770x1380	1600x1200x1700
200		520x520	1390	1335x785x1395	1600x1200x1700
250		520x520	1480	1345x790x1410	1600x1200x1700
315		670x660	1580	1355x820x1425	1600x1200x1700
400		670x660	1740	1365x820x1445	1700x1200x1800
500		670x660	1850	1375x820x1465	1700x1200x1800
630		670x660	2200	1380x830x1485	1700x1200x1800
800		670x660	2460	1445x840x1600	1800x1300x1800
1000		820x820	2950	1515x990x1625	2000x1400x2000
1250		820x820	3360	1595x990x1660	2000x1400x2000
1600		820x820	4060	1735x990x1885	2200x1400x2200
2000		1070x1070	4710	1760x1280x2040	2200x1600x2400
2500		1070x1070	5830	1895x1280x2080	2200x1600x2400

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20kV 树脂浇注式配电变压器机械参数
Mechanical data of 20kV CRT

额定容量 Rated Power (kVA)	线圈材料 Winding Material	底座 Base Frame Q1 x Q2 (mm)	重量 Weight (kg)	外形尺寸 (长 x 宽 x 高) Outline Dimension (Length x Width x Height) (mm)	外壳尺寸 (IP20) (长 x 宽 x 高) Enclosure Dimension (IP20) (Length x Width x Height) (mm)
200	铜 Copper	520x520	1370	1420x875x1220	2000x1500x2000
250		520x520	1380	1400x870x1230	2000x1500x2000
315		670x660	1480	1430x910x1295	2000x1500x2000
400		670x660	1660	1480x910x1355	2000x1500x2000
500		670x660	1820	1490x860x1405	2000x1500x2000
630		670x660	2030	1540x870x1430	2000x1500x2200
800		670x660	2380	1590x880x1550	2000x1500x2200
1000		820x820	2740	1620x990x1570	2200x1650x2200
1250		820x820	3330	1710x990x1615	2200x1650x2200
1600		820x820	4070	1810x1010x1680	2200x1650x2200
2000		1070x1070	5130	1940x1280x1765	2500x1800x2400
2500		1070x1070	6070	2030x1280x1885	2500x1800x2400
200	铝 Aluminum	520x520	1210	1450x990x1340	2000x1500x2000
250		520x520	1250	1420x990x1340	2000x1500x2000
315		670x660	1310	1440x990x1395	2000x1500x2000
400		670x660	1470	1490x990x1470	2000x1500x2000
500		670x660	1640	1530x990x1480	2000x1500x2000
630		670x660	1890	1580x990x1525	2000x1500x2200
800		670x660	2170	1630x890x1570	2000x1500x2200
1000		820x820	2680	1720x995x1640	2200x1650x2200
1250		820x820	3040	1810x1005x1735	2200x1650x2200
1600		820x820	3810	1870x1015x1955	2200x1650x2200
2000		1070x1070	4440	2000x1280x2045	2500x1800x2400
2500		1070x1070	5510	2190x1280x2075	2500x1800x2400

35kV 树脂浇注式配电变压器机械参数
Mechanical data of 35kV CRT

额定容量 Rated Power (kVA)	线圈材料 Winding Material	底座 Base Frame Q1 x Q2 (mm)	重量 Weight (kg)	外形尺寸 (长 x 宽 x 高) Outline Dimension (Length x Width x Height) (mm)	外壳尺寸 (IP20) (长 x 宽 x 高) Enclosure Dimension (IP20) (Length x Width x Height) (mm)
200	铜 Copper	520x520	2380	1830x1025x1405	2500x1800x2200
250		520x520	2440	1840x1025x1420	2500x1800x2200
315		670x660	2480	1800x1090x1550	2500x1800x2200
400		670x660	2900	1850x1095x1660	2500x1800x2200
500		670x660	3000	1800x1090x1710	2500x1800x2200
630		670x660	3510	1860x1100x1800	2500x1800x2200
800		670x660	3760	1890x1110x1820	2500x1800x2200
1000		820x820	4440	1890x1110x1820	2800x2000x2400
1250		820x820	4650	1980x1210x1900	2800x2000x2400

注：以上数据仅供参考，公司保留数据变动的权利。
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35kV 树脂浇注式配电变压器机械参数（续）
Mechanical data of 35kV CRT

额定容量 Rated Power (kVA)	线圈材料 Winding Material	底座 Base Frame Q1 x Q2 (mm)	重量 Weight (kg)	外形尺寸 (长 x 宽 x 高) Outline Dimension (Length x Width x Height) (mm)	外壳尺寸 (IP20) (长 x 宽 x 高) Enclosure Dimension (IP20) (Length x Width x Height) (mm)
1600	铜 Copper	820x820	6120	2160x1230x1970	2800x2000x2400
2000		1070x1070	6720	2160x1380x2070	3000x2200x2600
2500		1070x1070	8170	2310x1300x2140	3000x2200x2600
200	铝 Aluminum	520x520	1920	1840x1065x1365	2500x1800x2200
250		520x520	2140	1860x1030x1430	2500x1800x2200
315		670x660	2300	1840x1095x1610	2500x1800x2200
400		670x660	2570	1870x1100x1675	2500x1800x2200
500		670x660	2820	1870x1100x1780	2500x1800x2200
630		670x660	3080	1880x1100x1790	2500x1800x2200
800		670x660	3430	1940x1110x1830	2500x1800x2200
1000		820x820	4060	2010x1160x1890	2800x2000x2400
1250		820x820	4480	2040x1120x1980	2800x2000x2400
1600		820x820	5690	2150x1130x2190	2800x2000x2400
2000		1070x1070	6170	2200x1290x2290	3000x2200x2600
2500		1070x1070	7820	2400x1310x2440	3000x2200x2600

35kV 树脂浇注式电力变压器机械参数
Mechanical data of 35kV power CRT

额定容量 Rated Power (kVA)	线圈材料 Winding Material	底座 Base Frame Q1 x Q2 (mm)	重量 Weight (kg)	外形尺寸 (长 x 宽 x 高) Outline Dimension (Length x Width x Height) (mm)	外壳尺寸 (IP20) (长 x 宽 x 高) Enclosure Dimension (IP20) (Length x Width x Height) (mm)
4000	铜 Copper	按客户要求定制	13800	3230x1620x2400	4000x2500x2900
5000			15200	3300x1705x2555	4000x2500x3100
6300			19800	3505x1955x2830	4200x2800x3400
8000			23200	3755x1985x3000	4500x2800x3500
10000			27700	3900x2055x3285	4600x2900x3800
12500			32540	4095x2110x3400	4800x2900x3900
16000			35500	4105x2290x3780	4800x3100x4300
20000			41850	4295x2450x3965	5000x3300x4500
4000	铝 Aluminum	按客户要求定制	12360	3300x1510x2350	4000x2300x2900
5000			13190	3350x1650x2650	4100x2500x3200
6300			15550	3450x1955x2850	4200x2800x3400
8000			19740	3600x2005x3280	4300x2800x3800
10000			23630	3755x2105x3395	4500x2900x3900
12500			25600	3950x2180x3660	4700x3000x4100
16000			28500	4150x2350x3880	4900x3200x4400
20000			33900	4350x2580x4065	5100x3400x4600

以上尺寸、重量不含有载调压开关。
Dimension and weight of OLTC is excluded.

注：以上数据仅供参考，公司保留数据变动的权利。
Comments: We reserve the right to make technical changes or modify the contents of this catalogue without prior notice.

客户化的特殊产品

CUSTOMIZED PRODUCTS



带有载调压开关的树脂浇注式变压器

带有载调压开关的树脂浇注式变压器额定容量最高可达 20MVA。额定电压最高 36kV，冲击电压最高 170kV。这种变压器主要应用于对供电要求较高的场合，比如现代化工厂、医院、办公楼以及购物中心。

CRT with on-load tap changer

CRT with on-load tap changer is available up to rating of 20MVA. 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.



整流变压器

这种变压器专门用于可控硅变流器或者二极管整流器系统。

此类转换设备对变压器的影响和附加的结构要求如下：

- 谐波电流造成的负载增加
- 多绕组系统内相电流的平衡（如 12 脉冲系统）
- 短时过载系数达到 2.5

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



双低压变压器

此类变压器一、二次侧均为低压，一般用于海洋钻井平台或船舶上，作为钻井变，推进变或者照明变使用。对于用电安全要求较高的场合，此类变压器可作为隔离变压器使用。

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.



水冷变压器

通过水在外壳中的循环促进变压器外壳中空气的冷却，从而增加变压器的散热能力。这种变压器结构紧凑，多用在船舶等对变压器尺寸及重量有限的地方。

- 特殊设计专用于钻井平台、隧道挖掘机、风力发电及船用设备，存在安装空间受限及频繁震动的场合。
- 由一台干式变压器及 IP44 的防护外壳组成，主要部件还有水冷热交换器及马达。
- 过载能力可以达到 50%，重量可以减轻 20%，散发到周围环境的热量仅占总损耗的 10%，冷却水带走其余热量。

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.



海上风电用干式变压器

满足海上风电用变压器的特殊技术要求，变压器体积小，轻量化，温升低，过载能力强，抗振，耐腐蚀，并且配备高防护等级紧凑型外壳。

风冷方案可用于风机塔筒内或机舱内。

水冷方案可用于风机塔筒内。

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.

以上只列出部分定制产品，西门子能源树脂浇注式配电变压器客户化的特殊产品还包括电抗器等。其它的特殊要求或用途，请向我们咨询。

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.

试验室检测能力

TESTING CAPABILITY OF LABORATORY

广州西门子能源变压器有限公司拥有除德国本部外唯一的树脂浇注式变压器研发中心，同时拥有配置先进仪器设备的试验站，可以对原材料和变压器进行一系列的测试。

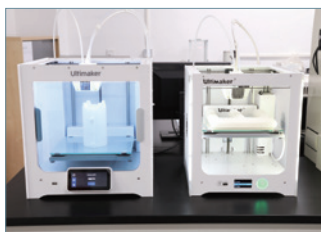
研发中心配备有瑞士 Mettler Toledo 差示扫描量热仪 DSC1，美国 MTS 万能测试机，盐雾腐蚀试验箱，SST-500 硅钢片铁损测试仪，HVS-5 型维氏显微硬度仪，3D 打印机等一大批检测设备，可以对变压器的原材料进行性能检测，检测项目包括树脂玻璃化转变温度，材料抗压抗拉能力，面板耐盐雾腐蚀能力，硅钢片的损耗，表面涂层质量等，这些设备为保证变压器产品的质量奠定了坚实的基础。

试验站拥有瑞士哈弗莱变压器测试系统、雷电冲击测试系统等世界先进的试验设备，这些设备可以执行 GB、IEC 或 ANSI 系列标准对树脂浇注式配电变压器要求的全部例行试验和型式试验，并且可以在厂内完成部分特殊试验。

Siemens Energy 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 spray corrosion ability of panel, loss of silicon steel, quality of superficial coating. These equipments provide an effective guarantee for the quality of our products.

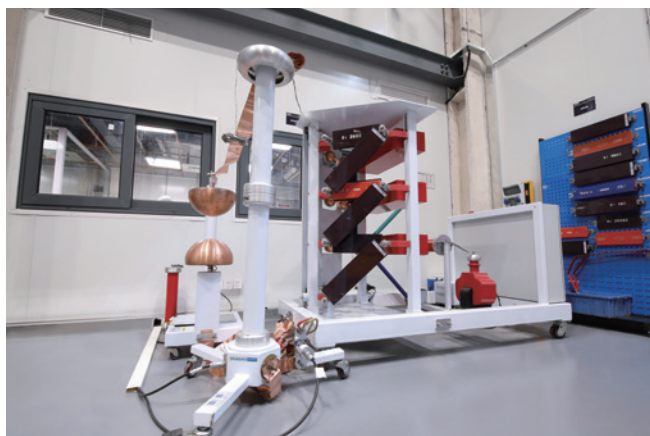
Switzerland HAEFELY transformer test system, Lightning impulse test system etc, which are advanced equipments of world, are equipped in the test station, all routing or type test of CRT specified in GB, IEC or ANSI standards can be performed by these equipments. And some special tests can also be performed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



3D 打印机
3D Printer



差示扫描量热仪
Mettler Toledo DSC1



雷电冲击测试系统
Lighting Impulse test system



MTS 万能测试机
MTS Universal testing machine

产品应用业绩

PRODUCT REFERENCE



应用在豪华游轮“至尊公主号”上的 8 台西门子能源整流变压器
8 units Siemens Energy rectified transformer used on the luxury cruise ship "Grand princess"



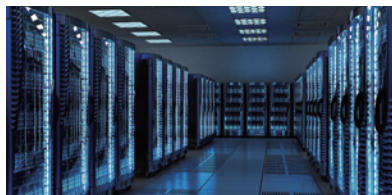
西门子能源变压器使用在阿尔卑斯山上
Siemens Energy transformer on top of the Alps Mountain.



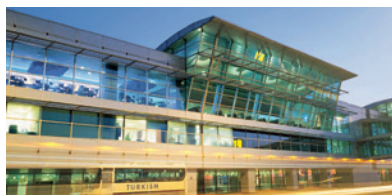
西门子能源变压器应用在深海钻井平台
Siemens Energy transformer in deepwater drilling platform.



西门子能源变压器应用于风电行业
Siemens Energy transformer in wind power.



西门子能源变压器应用于国内外大型数据中心
Siemens Energy transformers in several large data centers all over the world.



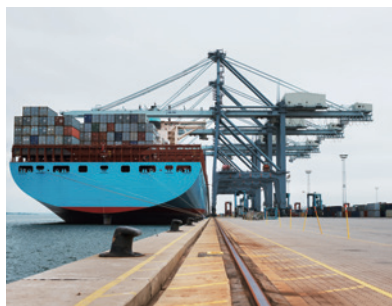
西门子能源变压器应用在阿塔突尔克机场
Siemens Energy transformer used in Ataturk airport.



西门子能源变压器应用于地铁
Siemens Energy transformer in the subway.



西门子能源变压器应用于国内半导体行业
Siemens Energy transformers used in semi-conductor industry.

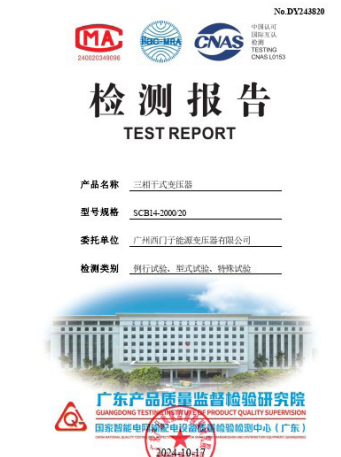


西门子能源变压器应用于港口起重机，轮胎吊等
Siemens Energy transformers in cranes at the harbour.



西门子能源变压器应用于澳门美高梅酒店
Siemens Energy transformer in MGM hotel in Macau.

证书 CERTIFICATES



试验合格证书
No: CEST/T-20104
(检测报告编号: DY202463)

生产单位: 广州西子变压器有限公司
样品名称: 三相干式变压器
样品型号: SCB11-20000/20
样品序号: E2019298
试验项目: 例行试验、型式试验、三相变压器等序阻抗测量。
试验依据: GB/T 1094.1-2013, GB/T 1094.3-2017, GB/T 1094.10-2003, GB/T 1094.11-2007。
试验结论: 三相干式变压器(型号: SCB11-20000/20)例行试验、型式试验、三相变压器等序阻抗测量的试验结果符合试验依据, 样品上述试验合格。
发证日期: 2020年08月18日
批准: 朱劲

国家智能电网输配电设备质量监督检验中心(广东)
证书查询网址: www.cesit.com.cn 或 www.cesit.com.cn

试验合格证书
No: CEST/T-21248
(检测报告编号: DY214009)

生产者: 广州西子变压器有限公司
样品名称: 干式变压器
样品型号: SCZ(B) 11-8000/25
样品序号: E21024536
试验项目: 例行试验、型式试验
试验依据: GB/T 1094.1-2013, GB/T 1094.3-2017, GB/T 1094.10-2003, GB/T 1094.11-2007, GB/T 10228-2015
试验结论: 干式变压器(型号: SCZ(B) 11-8000/25)例行试验、型式试验的试验结果符合试验依据, 样品上述试验合格。
发证日期: 2021年10月28日
批准: 有奔健

广东产品质量监督检验研究院
(国家智能电网输配电设备质量监督检验中心(广东))
证书查询网址: www.cesit.com.cn

试验合格证书
No: CEST/T-22150
(检测报告编号: DY224355)

生产者: 广州西子变压器有限公司
样品名称: 三相干式变压器
样品型号: SCB11-20000/35
样品序号: E22028229
试验项目: 例行试验、型式试验、短路承受能力试验
试验依据: GB/T 1094.1-2013, GB/T 1094.3-2017, GB/T 1094.5-2008, GB/T 1094.10-2003, GB/T 1094.11-2007, GB/T 10228-2015
试验结论: 三相干式变压器(型号: SCB11-20000/35)例行试验、型式试验、短路承受能力试验的试验结果符合试验依据, 样品上述试验合格。
发证日期: 2022年12月05日
批准: 有奔健

广东产品质量监督检验研究院
(国家智能电网输配电设备质量监督检验中心(广东))
证书查询网址: www.cesit.com.cn

Intertek Certificate No. 21673

ASTA Certificate of Special Tests

Laboratory Ref No: 810028

Apparatus: A three phase, 600 VAC, 1000/433 V, 50 Hz, Category 1, No, Dyn11, non-ventilated oil type transformer. The high-voltage winding test 5 taps and the principal tapping to tap 5.

Designation: 800 VAC

Manufacturer: Siemens Transformer (Guangzhou) Co., Ltd. 47 Fangping Road, East Area, GEITD, 510530, Guangzhou, China

Tested By: Wenging Transformer Production Institute Co., Ltd. 10-10-1-1-1, Foshan, South Avenue 10, Shunde New District, Shunde, Learning, Learning, China

Date of test: 10/10/2023

The apparatus, constructional details and photographs incorporated in this certificate has been subjected to the series of proving tests in accordance with IEC 60076-1, Edition 3.2014-01, Classes 10 to 25, 28 to 35 and 37 IEC 60076-2, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-3, Edition 3.2014-01, Classes 10 and 11

The results are shown in the Report of Proving Tests attached hereto. The values obtained and the general performance is considered to comply with the above Standard(s) and to justify the ratings assigned to the apparatus as indicated.

Climatic test: Class E2 IEC 60076-1, 2004 Clause 27
Electromagnetic test: Class E2 IEC 60076-1, 2004 Clause 28
Fire behaviour test: Class F1 IEC 60076-1, 2004 Clause 28

The Certificate applies only to the apparatus tested. The responsibility for conformity of any apparatus having the same or other designations rests with the Manufacturer.

The Certificate comprises this front sheet, 32 other pages and 7 drawings as detailed on pages 1 to 2.

Any original manufacturer of this whole certificate or reproduction of its parts must be made in accordance with the above Standard(s) and to justify the ratings assigned to the apparatus as indicated. Responsibility for conformity of any apparatus having the same or other designations rests with the Manufacturer.

ASTA Observer: Stephen Yr. 21/10/2023 Date

intertek Test Quality Assured

ASTA TYPE CERTIFICATE OF SPECIAL TESTS

Project No: G104173106 Certificate No: ASTA-TYPE-000452

Apparatus: Siemens Transformer (Guangzhou) Co., Ltd. 47 Fangping Road, East Area, GEITD, 510530, Guangzhou, China

Apparatus: Three-phase, 200 VAC, 2000/433 V, 50 Hz, Category 1, No, Dyn11, non-ventilated oil type transformer. The high-voltage winding test 5 taps and the principal tapping to tap 5, 1 tap position 1, 1 tap position 2.

Manufacturer: Siemens Transformer (Guangzhou) Co., Ltd. 47 Fangping Road, East Area, GEITD, 510530, Guangzhou, China

Test Report No: 810028

Designation: SCB11-20000/20

The apparatus, constructional details and photographs incorporated in this certificate has been subjected to the series of proving tests in accordance with IEC 60076-1, Edition 3.2014-01, Classes 10 to 25, 28 to 35 and 37 IEC 60076-2, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-3, Edition 3.2014-01, Classes 10 and 11 IEC 60076-4, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-5, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-6, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-7, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-8, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-9, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-10, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-11, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-12, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-13, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-14, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-15, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-16, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-17, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-18, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-19, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-20, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-21, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-22, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-23, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-24, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-25, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-26, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-27, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-28, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-29, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-30, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-31, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-32, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-33, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-34, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-35, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-36, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-37, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-38, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-39, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-40, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-41, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-42, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-43, 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and 1.5 IEC 60076-58, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-59, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-60, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-61, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-62, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-63, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-64, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-65, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-66, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-67, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-68, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-69, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-70, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-71, Edition 3.2014-01, Classes 1.1, 1.2, 1.3, 1.4 and 1.5 IEC 60076-72, Edition 3.2014-01, Classes 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2025.07.V11

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