VEICHI

Power Transformers

Stock Code: 688698

VEICHI

Suzhou Veichi Electric Co.,Ltd.

No.1888 Songwei Road, Guoxiang Street, Wuzhong Economic and Technological Development Zone, Suzhou, Jiangsu Province, China.

Tel:+86-512-6617 1988 Fax:+86-512-6617 3610

Facebook: https://www.facebook.com/ veichigroup

WhatsApp:+86-138 2881 8903 Https://www.veichi.org

Official Website

*Version: Y6/2-01

About Us

Veichi Electric (Stock Code: 688698) specializes in electrical transmission and industrial control, operating as an integrated high-tech enterprise in R&D, production, and sales of industrial automation products. With a vision to lead in smart industry and green energy solutions, the company leverages its R&D and manufacturing hubs in Suzhou, additional R&D centers in Shenzhen and Xi'an, and wholly-owned subsidiaries overseas, consistently serving customers worldwide with competitive and reliable solutions.

Under the "One Core, Two New Drivers" strategy, Veichi focuses on industrial automation, offering AC drives, servo systems, and control systems widely applied across heavy and light industries, as well as high-end equipment sectors, supporting the digital and intelligent transformation of manufacturing with its tailored solutions. Simultaneously, in two emerging fields, it provides one-stop solutions for humanoid, collaborative, and mobile robots in embodied intelligence, while in green energy, it delves into segments like photovoltaic, energy storage, and hydrogen energy, to "connect every device with green power," fostering a synergistic growth between core operations and new ventures.

Sustained R&D has yielded a portfolio of proprietary patented technologies including silicon carbide application, HF injection, motor controls and protections (auto-tuning, flying-start, high-speed flux-weakening, V/F control, vector control), high-density water-cooling layout, and IGBT drive protection. As of September 30, 2025, Veichi holds 234 patents, with 66 for invention.

Over two decades of steady growth, Veichi has earned numerous certifications and accolades from national and regulatory authorities, including "High-Tech Enterprise," "Postdoctoral Research Workstation," and provincial honors like "Engineering Technology Research Center," "Enterprise Technology Center," and "Industrial Internet Development Demonstration Enterprise (Benchmark Factory Category)."

Guided by its mission to "Drive Smart Industry, Co-create a Green Future," Veichi will continue to intensify R&D and advance into high-performance, high-reliability fields to propel global progress.

2005
- Start of business in Shenzhen
- First generation of AC drive launched

2016
- Suzhou VEICHI Phase I put into operation
- First-generation motion control system successfully launched

2019
- Restructured into a joint-stock company
- VEICHI overseas subsidiary established, marking the start of global expansion

2020
- Listed on the Science and Technology Innovation Board (STAR Market)
- Recognized as a provincial SRDI "Little Giant" enterprise

2021
- VEICHI-controlled subsidiary established, enhancing industrial chain integration
- Recognized as a SRDI "Little Giant" enterprise

2022
- Xi'an R&D Center established
- VEICHI Digital Energy subsidiary founded, digitalizing the green energy
  Integrated power solutions for humanoid/ collaborative/mobile robots launched, initiating deployment in the robotics sector

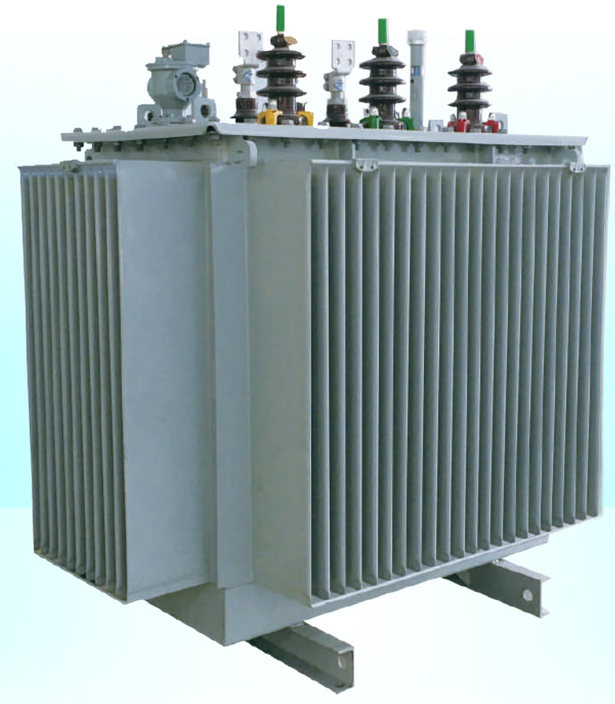
2023
- Suzhou VEICHI Phase II put into operation
- VEICHI Medical Equipment subsidiary established, expanding into the healthcare sector

2024
- Strategic acquisition of Changzhou Jiteng, entering the port and marine sector
- "One Core, Two New Drivers" development strategy adopted

2025
- Suzhou VEICHI Phase III digital production base put into operation
- Changzhou high-end electrical equipment production base topped out
- Jiujiang smart production base groundbreaking ceremony held

10kV S11/S13/S14 Series Oil-Immersed Power Transformers

Our 10kV hermetically sealed distribution transformers are designed for reliable and efficient power distribution with low losses. The fully oil-filled design and corrugated tank compensate for oil volume changes caused by temperature variations. The compact, maintenance-free design is available with either a fully welded tank cover or a bolted cover with nitrile rubber gasket sealing.



Product Features

The core is manufactured from high-permeability cold-rolled grain-oriented silicon steel with a thickness of less than 0.3mm. A 45° full-miter step-lap structure is adopted, with the core surface coated for moisture and corrosion protection.

The LV winding adopts a cylindrical copper foil structure, while the HV winding features a multi-layer cylindrical design, ensuring low leakage flux, high mechanical strength, and excellent short-circuit withstand capability.

The core and windings are securely clamped. HV and LV leads, together with other fastening components, are fitted with self-locking nuts to withstand transportation-induced vibration and impact.

The core and coils are vacuum dried, and transformer oil is vacuum filtered and vacuum filled to minimize moisture content.

The corrugated tank compensates for oil volume changes caused by temperature variations, eliminating the need for an oil conservator and reducing the overall transformer height.

It also isolates the transformer oil from the atmosphere, effectively preventing the ingress of oxygen and moisture.

These features ensure stable insulation performance, low maintenance requirements, and long service life under normal operating conditions.

Pressure Relief Valve: Operates at 35kPa to relieve excessive internal pressure and provide alarm indication. Automatic reset after pressure normalization.

Temperature Monitoring: Available for transformers rated 800kVA and above. Optional functions include temperature alarm, temperature trip, light gas alarm, and heavy gas alarm.

Technical Specifications

S11-M-30-2500/6-10 Off-Circuit Tap-Changing Distribution Transformers

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss (W)	No-Load Current (%)	Short-Circuit Impedance (%)
30	6 6.3 10 10.5 11	±5 ±2x2.5	0.4	Dyn11 Yzn11 Yyn0	100	630/600	1.5	4.0
50					130	910/870	1.3	
63					150	1090/1040	1.2	
80					180	1310/1250	1.2	
100					200	1580/1500	1.1	
125					240	1890/1800	1.1	
160					280	2310/2200	1.0	
200					340	273012600	1.0	
250					400	320013050	0.9	
315					480	3830/3650	0.9	
400					570	4520/4300	0.8	
500					680	5410/5150	0.8	
630				Dyn11 Yyn0	810	6200	0.6	4.5
800					980	7500	0.6	
1000					1150	10300	0.6	
1250					1360	12000	0.5	
1600					1640	14500	0.5	
2000					1940	18300	0.4	5
2500					2290	21200	0.4	

For transformers rated 500kVA and below, load loss values above the slash apply to Dyn11 or Yzn11 vector groups, while values below the slash apply to the Yyn0 vector group.

S13-M-30-2500/6-10 Off-Circuit Tap-Changing Distribution Transformers

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss (W)	No-Load Current (%)	Short-Circuit Impedance (%)
30	6 6.3 10 10.5 11	±5 ±2x2.5	0.4	Dyn11 Yzn11 Yyn0	80	630/600	1.0	4.0
50					100	910/870	0.9	
63					110	1090/1040	0.9	
80					130	1310/1250	0.9	
100					150	1580/1500	0.8	
125					170	1890/1800	0.8	
160					200	2310/2200	0.7	
200					240	273012600	0.7	
250					290	320013050	0.6	
315					340	3830/3650	0.6	
400					410	4520/4300	0.5	
500					480	5410/5150	0.5	
630				Dyn11 Yyn0	570	6200	0.4	4.5
800					700	7500	0.4	
1000					830	10300	0.4	
1250					970	12000	0.3	
1600					1170	14500	0.3	
2000					1550	18300	0.3	5
2500					1830	21200	0.3	

For transformers rated 500kVA and below, load loss values above the slash apply to Dyn11 or Yzn11 vector groups, while values below the slash apply to the Yyn0 vector group.

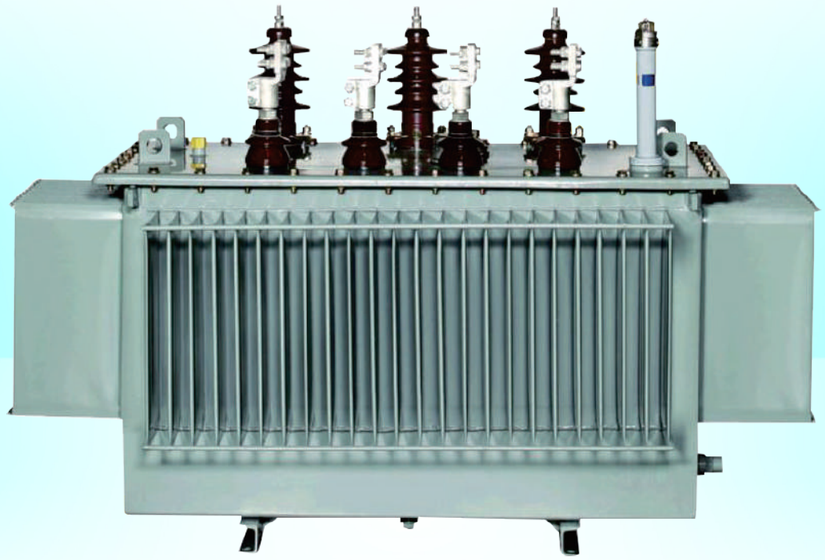
S14-M-30-2500/6-10 Off-Circuit Tap-Changing Distribution Transformers

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss (W)	No-Load Current (%)	Short-Circuit Impedance (%)
30	6 6.3 10 10.5 11	±5 ±2x2.5	0.4	Dyn11 Yzn11 Yyn0	80	505/480	1.0	4.0
50					100	730/695	0.9	
63					110	870/830	0.9	
80					130	1050/1000	0.9	
100					150	1260/1200	0.8	
125					170	1510/1440	0.8	
160					200	1850/1760	0.7	
200					240	2180/2080	0.7	
250					290	2560/2400	0.6	
315					340	3060/2920	0.6	
400					410	3610/3440	0.5	
500					480	4330/4120	0.5	
630				Dyn11 Yyn0	570	4960	0.4	4.5
800					700	6000	0.4	
1000					830	8240	0.4	
1250					970	9600	0.3	
1600					1170	11600	0.3	
2000					1550	14600	0.3	5
2500					1830	16900	0.3	

For transformers rated 500kVA and below, load loss values above the slash apply to Dyn11 or Yzn11 vector groups, while values below the slash apply to the Yyn0 vector group.

10kV SH15/SH16 Series
Amorphous Alloy Oil-Immersed Power Transformers

The SH15/SH16 series amorphous alloy oil-immersed transformers combine a hermetically sealed design with an amorphous alloy strip core. Featuring low magnetizing loss and 3~6 times higher resistivity than conventional silicon steel, the amorphous alloy core significantly reduces eddy-current losses and achieves up to 60% lower no-load loss than GB/T 6451 requirements. With outstanding energy-saving performance and reliable operation, the series is well suited for modern distribution network upgrades.



Product Features

The transformer core is made of amorphous alloy strip, delivering exceptionally low no-load current and no-load loss for improved energy efficiency.

The amorphous alloy core adopts a three-phase, five-limb design, reducing transformer height. The outer limbs provide a flux path for harmonic and zero-sequence flux, helping reduce leakage-reactance voltage drop and improve power quality.

For ratings above 100kVA, the low-voltage winding uses a cylindrical copper foil structure, while the high-voltage winding uses a multi-layer cylindrical structure. This design ensures balanced ampere-turn distribution and low leakage flux. HV and LV windings are wound under controlled conductor tension and thermally formed to enhance mechanical strength and short-circuit withstand capability.

The active part adopts a non-core-lifting design and is processed through vacuum drying and vacuum oil filling. The transformer is equipped with a hermetically sealed tank without oil conservator.

The sealed design isolates the insulating oil and insulation system from ambient air. No oil replacement is required under normal operating conditions, reducing maintenance requirements and extending service life.

The additional investment compared with conventional silicon steel core transformers can typically be recovered within approximately three years through lower energy losses and operating costs.

Technical Specifications

SH15-M-30-2500/6-10 Amorphous Alloy Off-Circuit Distribution Transformers

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss (W)	No-Load Current (%)	Short-Circuit Impedance (%)
30	6 6.3 10 10.5 11	±5 ±2x2.5	0.4	Dyn11	33	630/600	1.5	4.0
50					43	910/870	1.2	
63					50	1090/1040	1.1	
80					60	1310/1250	1.0	
100					75	1580/1500	0.9	
125					85	1890/1800	0.8	
160					100	2310/2200	0.6	
200					120	273012600	0.6	
250					140	320013050	0.6	
315					170	3830/3650	0.5	
400					200	4520/4300	0.5	
500					240	5410/5150	0.5	
630					320	6200	0.3	4.5
800					380	7500	0.3	
1000					450	10300	0.3	
1250					530	12000	0.2	
1600					630	14500	02	
2000					750	18300	0.2	5
2500					900	21200	0.2	

For transformers with a three-phase three-limb core, the Yyn0 vector group is also available upon request. For transformers rated 500kVA and below, load loss values above the slash apply to Dyn11 vector groups, while values below the slash apply to the Yyn0 vector group.

SH16-M-30-2500/6-10 Amorphous Alloy Off-Circuit Distribution Transformers

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss (W)	No-Load Current (%)	Short-Circuit Impedance (%)
30	6 6.3 10 10.5 11	±5 ±2x2.5	0.4	Dyn11	33	565/540	1.5	4.0
50					43	8201785	1.2	
63					50	980/935	1.1	
80					60	1180/1120	1.0	
100					75	1420/1350	0.9	
125					85	1700/1620	0.8	
160					100	2080/1980	0.6	
200					120	2450/2340	0.6	
250					140	2880/2740	0.6	
315					170	3440/3280	0.5	
400					200	4070/3870	0.5	
500					240	4870/4630	0.5	
630					320	5580	0.3	4.5
800					380	6750	0.3	
1000					450	9270	0.3	
1250					530	10800	0.2	
1600					630	13000	02	
2000					750	16400	0.2	5
2500					900	19000	0.2	

For transformers with a three-phase three-limb core, the Yyn0 vector group is also available upon request. For transformers rated 500kVA and below, load loss values above the slash apply to Dyn11 vector groups, while values below the slash apply to the Yyn0 vector group.

10kV S11-R.L/S13-R.L/S14-R.L Series Three-Dimensional Wound Core Oil-Immersed Power Transformers

The S11-R.L/S13-R.L/S14-R.L series three-dimensional wound core oil-immersed transformers feature a compact, symmetrical three-phase core structure for high reliability, low losses, and reduced noise.

Unlike conventional planar core designs, the three core limbs are arranged in an equilateral triangle, ensuring equal and optimized magnetic path lengths. The air-gap-free magnetic circuit and tightly wound silicon steel strips improve magnetic performance and operating efficiency. With lower noise, a compact footprint, reduced material consumption, and excellent energy-saving performance, the series is well suited for modern distribution networks.

Item	Three-Dimensional Wound Core Oil-Immersed Transformer	Laminated Core Oil-Immersed Transformer
Material Saving	Scrap-free processing with 100% material utilization, saving 25%~30% silicon steel and 5%~8% copper	Lower silicon steel utilization and more scrap
Losses and No-Load Current	Joint-free three-phase magnetic circuit, with flux direction fully aligned with the grain orientation of silicon steel, significantly reducing no-load loss and no-load current	Multiple joints create air gaps in the magnetic circuit, increasing magnetic resistance, losses, and no-load current
Three-Phase Balance	Three identical single frames form an equilateral triangular core structure, ensuring equal and shortest magnetic path lengths and balanced phase losses	Unbalanced
Third Harmonics	Reduced	Not reduced
Electromagnetic Field Strength	Low	High
Short-Circuit Withstand Capability	High	Medium
Production Efficiency	5~6 fewer processes than laminated core production, ensuring higher efficiency and stable quality	Low
Size	Compact footprint and attractive appearance	Large
Anti-Theft Performance	The wound core is an integral structure; the core cannot be dismantled and the coils cannot be removed	Lower anti-theft performance

Technical Specifications

S11-R.L-30-2500/6-10kV Three-Dimensional Wound Core Distribution Transformer

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss (W)	No-Load Current (%)	Short-Circuit Impedance (%)
30	6 6.3 10 10.5 11	±5 ±2x2.5	0.4	Dyn11 Yzn11 Yyn0	100	630/600	0.4	4.0
50					130	910/870	0.38	
63					150	1090/1040	0.37	
80					180	1310/1250	0.35	
100					200	1580/1500	0.35	
125					240	1890/1800	0.334	
160					280	2310/2200	0.33	
200					340	2730/2600	0.32	
250					400	3200/3050	0.24	
315					480	3830/3650	0.22	
400					570	4520/4300	0.22	
500					680	5410/5150	0.22	
630				Dyn11 Yyn0	810	6200	0.21	4.5
800					980	7500	0.21	
1000					1150	10300	0.20	
1250					1360	12000	0.19	
1600					1640	14500	0.18	
2000					1940	18300	0.16	5
2500					2290	21200	0.15	

For transformers rated 500kVA and below, load loss values above the slash apply to Dyn11 or Yzn11 vector groups, while values below the slash apply to the Yyn0 vector group.

S13-R.L-30-2500/6-10kV Three-Dimensional Wound Core Distribution Transformer

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss (W)	No-Load Current (%)	Short-Circuit Impedance (%)
30	6 6.3 10 10.5 11	±5 ±2x2.5	0.4	Dyn11 Yzn11 Yyn0	80	630/600	0.3	4.0
50					100	910/870	0.24	
63					110	1090/1040	0 23	
80					130	1310/1250	0.22	
100					150	1580/1500	0.21	
125					170	1890/1800	0.20	
160					200	2310/2200	0.19	
200					240	273012600	0.18	
250					290	320013050	0.17	
315					340	3830/3650	0.16	
400					410	4520/4300	0.16	
500					480	5410/5150	0.16	
630				Dyn11 Yyn0	570	6200	0 15	4.5
800					700	7500	0.15	
1000					830	10300	0.14	
1250					970	12000	0.13	
1600					1170	14500	0.12	
2000					1550	18300	0.11	5
2500					1830	21200	0.10	

For transformers rated 500kVA and below, load loss values above the slash apply to Dyn11 or Yzn11 vector groups, while values below the slash apply to the Yyn0 vector group.

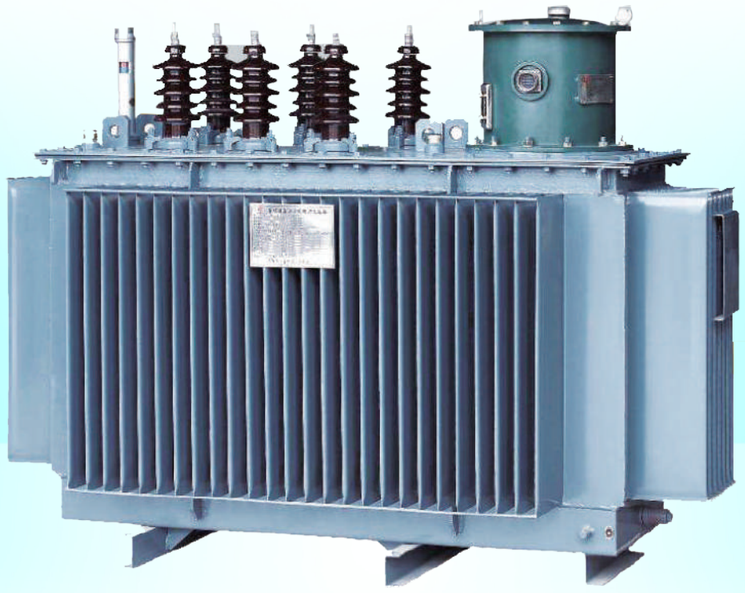
S14-R.L-30-2500/6-10kV Three-Dimensional Wound Core Distribution Transformer

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss (W)	No-Load Current (%)	Short-Circuit Impedance (%)
30	6 6.3 10 10.5 11	±5 ±2x2.5	0.4	Dyn11 Yzn11 Yyn0	80	505/480	0.3	4.0
50					100	730/695	0.24	
63					110	870/830	0 23	
80					130	1050/1000	0.22	
100					150	1260/1200	0.21	
125					170	1510/1440	0.20	
160					200	1850/1760	0.19	
200					240	2180/2080	0.18	
250					290	2560/2400	0.17	
315					340	3060/2920	0.16	
400					410	3610/3440	0.16	
500					480	4330/4120	0.16	
630				Dyn11 Yyn0	570	4960	0 15	4.5
800					700	6000	0.15	
1000					830	8240	0.14	
1250					970	9600	0.13	
1600					1170	11600	0.12	
2000					1550	14600	0.11	5
2500					1830	16900	0.10	

For transformers rated 500kVA and below, load loss values above the slash apply to Dyn11 or Yzn11 vector groups, while values below the slash apply to the Yyn0 vector group.

10kV On-Load Capacity and Voltage Regulating Oil-Immersed Power Transformers

The on-load capacity and voltage regulating oil-immersed transformer is designed for 10kV distribution areas up to 630kVA. It provides automatic capacity and voltage regulation, distribution monitoring, and wireless remote control.



Product Features

Automatic Voltage Regulation
The transformer automatically regulates voltage in response to load fluctuations, improving power quality, extending equipment service life, and ensuring voltage compliance during peak and off-peak periods.

Automatic Capacity Regulation
The transformer automatically adjusts capacity according to load demand. During low-load periods, it operates at the low-capacity setting, reducing no-load active loss to less than one third and reactive power demand to one tenth of those at high capacity.

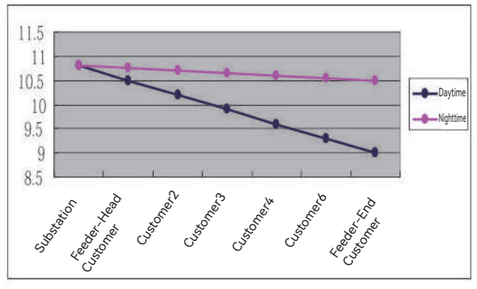
Distribution Monitoring and Wireless Remote Control
Wi-Fi, GSM, and GPRS communication options enable real-time monitoring, remote control, and parameter viewing/setting for automated distribution network operation.

Maintenance-Free Design
Maintenance-free throughout the service life, providing convenient and reliable operation.

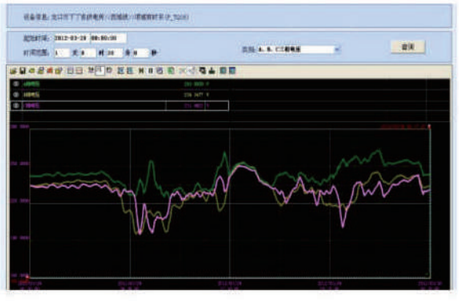
Function Diagram of Automatic On-Load Voltage and Capacity Regulating Distribution Transformer

Expected Benefits of Capacity and Voltage Regulating Transformers

Improved Voltage Quality
Automatic on-load voltage regulation compensates for line voltage drops and load fluctuations, reducing overvoltage and undervoltage risks while improving voltage compliance and power quality.

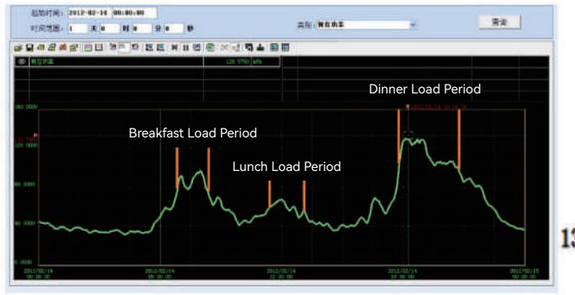


Line Voltage Drop Diagram

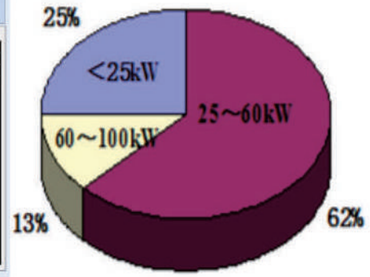


Daily Voltage Fluctuation Curve

Reduced No-Load Loss
Automatic capacity regulation enables the transformer to operate at a lower capacity during no-load and light-load periods, significantly reducing no-load loss and improving energy efficiency.



Daily Apparent Power Curve



Load Period Distribution

Improved Operating Safety
Capacity regulation helps meet seasonal and peak load demands while reducing no-load loss during low-load periods, supporting safe and efficient transformer operation.

Load Profile Before and After the Spring Festival Holiday

Technical Specifications

SZ11-M.ZT Model On-Load Capacity and Voltage Regulating Transformer

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss (W)	No-Load Current (%)	Short-Circuit Impedance (%)
160 {50)	10 10.5 1 1	±5 ±2x2.5	0.4	Dyn11 (Yyn0)	280(130)	2310(870)	1.6 (0.8)	4.0
200(63)					340(150)	2730(1040)	1.5(0.7)	
250(80)					400(180)	3200 (1250)	1.4 (0.7)	
315(100)					480(200)	3830(1500)	1.4(0.7)	
400(125)					570(240)	4520(1800)	1.3 (0.6)	
500(160)					680(280)	5410(2200)	1.2(0.6)	
630(200)					810(340)	6200(2600)	1.1(0.5)	4.5

Parameters in parentheses apply to lower-capacity ratings.

SZ13-M.ZT Model On-Load Capacity and Voltage Regulating Transformer

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss (W)	No-Load Current (%)	Short-Circuit Impedance (%)
160 {50)	10 10.5 1 1	±5 ±2x2.5	0.4	Dyn11 (Yyn0)	200(100)	2310(870)	1.4 (0.7)	4.0
200(63)					240(110)	2730(1040)	1.4(0.7)	
250(80)					290(130)	3200 (1250)	1.2 (0.6)	
315(100)					340(150)	3830(1500)	1.2(0.6)	
400(125)					410(170)	4520(1800)	1.0 (0.5)	
500(160)					480(200)	5410(2200)	1.0(0.5)	
630(200)					570(240)	6200(2600)	0.8(0.4)	4.5

Parameters in parentheses apply to lower-capacity ratings.

10kV High-Overload Oil-Immersed Power Transformers

High-overload distribution transformers are designed for distribution networks subject to short-term load peaks. These transformers are ideal for applications where the annual average load remains low, while temporary load demand may rise to 1.5~2 times the rated capacity for several days or weeks, typically for 2~3 hours per day. Typical applications include rural distribution networks with seasonal peak demand during holidays and agricultural periods.

Product Features

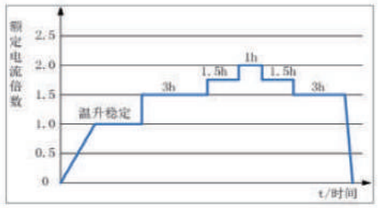
Designed for low annual load factors and significant seasonal load fluctuations, high-overload distribution transformers ensure reliable power supply while balancing long-term light-load operation with short-term overload capability.

They feature high energy efficiency, low losses, low no-load current, reduced reactive power consumption, and excellent short-circuit withstand capability.

High Overload Capability

The transformer is designed to withstand the following overload conditions without affecting its normal service life:

- 150% of rated capacity for 6 hours
- 175% of rated capacity for 3 hours
- 200% of rated capacity for 1 hour



Thermal Endurance Capability

High-overload distribution transformers are available with Class B or Class F insulation systems, depending on the insulation materials used. The corresponding temperature limits are listed below.

Temperature Rise Limits

	Class B Insulation	Class F Insulation
Top-oil temperature rise (K)	80	100
Average winding temperature rise (K)	85	100
Winding hot-spot temperature rise (K)	95	110
Core, tank and structural surface temperature rise (K)	80	100

Example: For a 200kVA Class B insulated high-overload transformer, model S13-M(B)-200/10GZ, operating at an ambient temperature of 40°C, the maximum permissible top-oil temperature is: 80K + 40K = 120°C All materials and components, including insulation materials, accessories, surface coatings and sealing elements, are designed to withstand temperatures above 120°C. With an additional 30K design margin, the maximum design temperature is 150°C.

Selection Criteria

For economical operation, high-overload distribution transformers are recommended for areas where the previous year's average load factor (β) was below 25%. The load factor is calculated based on annual energy consumption W (kWh) and annual maximum demand Pmax (kW).

$$\beta = \frac{W}{8760 P_{max}} \times 100\%$$

Transformer capacity should be selected based on the previous year's Pmax and the average annual growth rate of maximum demand over the past three years. Where maximum demand data is unavailable, the average annual growth rate of energy consumption may be used instead. Capacity planning should consider a 5~10 year development horizon. Recommended capacities are listed in the following table.

Previous Year's Maximum Demand	Average Annual Growth Rate of Maximum Demand (Past Three Years)						
P_{max}(kw)	<5%	5-10%	10-15%	15-20%	20-25%	25-30%	30%
20<P_{max}<30	50	50	50	50	100	100	100
30<P_{max}<40	50	50	50	50	100	100	100
40<P_{max}<60	100	100	100	100	100	200	200
60<P_{max}<80	100	100	100	100	200	200	200
80<P_{max}<100	100	100	100	100	200	200	200
100<P_{max}<120	200	200	200	200	200	200	
120<P_{max}<140	200	200	200	200	200		
140<P_{max}<160	200	200	200	200			
160<P_{max}<180	200	200	200	200			

Note: The intersection of the previous year's maximum demand and the average annual growth rate indicates the recommended rated capacity of the high-overload distribution transformer for the service area. Where no matching capacity is available, a high-overload transformer is not recommended; a conventional distribution transformer should be selected instead. Service areas outside the demand ranges specified in the table are not suitable for high-overload transformers.

35kV~110kV Oil-Immersed Power Transformers

Our 35kV~110kV oil-immersed power transformers are developed with advanced transformer technologies and engineered for urban and rural power networks. The series exceeds GB/T 6451 Technical Parameters and Requirements for Oil-Immersed Power Transformers and complies with JB/T 3837 Transformer Product Model Compilation Method, GB 1094 Power Transformers and applicable IEC standards.

With low losses, low noise, reliable sealing and maintenance-friendly design, these transformers provide safe, reliable and cost-efficient performance for power transmission and distribution applications.

Key Features

Transformer Core: The core features a multi-step lap joint structure with 45° mitred, hole-free laminations. Silicon steel sheets are processed on advanced longitudinal and transverse cutting lines, with burrs controlled within 0.02mm. Precision core stacking and strict assembly processes ensure optimal grain orientation, effectively reducing no-load loss. High-strength PET binding straps and plate-type clamps enhance mechanical integrity and reduce stray losses. A dedicated yoke clamping process ensures uniform core compression.

The core, tie plates, beams and supports form a rigid integrated structure, delivering optimized stress distribution, lower no-load loss and reduced noise.

Transformer Windings: High-, medium-, low-voltage, and tap-changing windings are wound on insulated paper tubes.

Low-voltage windings feature a helical design with axial oil ducts, while high- and medium-voltage windings use high-strength Dennison paper-wrapped conductors, optimizing core fill and minimizing eddy and circulating current losses. Locking bars reinforce windings internally and externally, and zero-clearance radial tightening enhances mechanical strength and short-circuit resilience.

Integrated oil channels reduce hotspot temperatures, prolonging transformer life. For on-load tap-changing transformers, an independent tap-changing winding ensures balanced ampere-turns, maintains stability, prevents deformation, and reduces axial forces during external short circuits, ensuring superior dynamic stability.

Active Part Insulation: The transformer's active part insulation and winding assembly are completed in a fully sealed, clean workshop, meeting the cleanliness and temperature-control requirements for high- and ultra-high-voltage transformers. Kerosene vapor-phase drying is employed to further ensure dryness and cleanliness. Lower support plates and upper pressboards are made of high-quality electrical laminated wood with excellent mechanical and electrical properties. All spacers, blocks and related components are carefully treated and rounded to minimize partial discharge. Steel clamps and press pins are designed for high strength, with maximum contact surfaces and optimized arrangement of supports to ensure balanced winding stress and overall active part stability. The active part uses an integrated constant-pressure drying process, reducing assembly time after winding stabilization. Winding concentricity is carefully adjusted to maintain uniform magnetic core alignment, ensuring equal coil reactance and balanced mechanical stress, thereby enhancing short-circuit withstand capability. Lower clamps are rigidly positioned against the lower tank section using adjustable back-pressure pins, while the upper beam is fixed to the upper tank cover with epoxy resin. This ensures the active part remains securely in place during transportation and under axial forces in operation.

Leads and Connections: HV and MV tapping leads are securely supported and connected to the tap changer, while LV busbar leads are firmly fixed to the core clamping structure, ensuring high mechanical stability. Standardized lead routing and termination processes minimize partial discharge and enhance long-term operational reliability.

Transformer Tank: Medium- and large-sized transformers feature a bell-type tank design. The corrugated tank walls are formed in a single process using large folding equipment, eliminating additional reinforcement plates. This enhances mechanical strength, reduces weld-related leakage risks, increases effective heat dissipation area, and helps lower transformer noise through wall dispersion effects. Tank sealing areas receive specialized machining, and the entire tank undergoes shot blasting to remove oxide scale, burrs and welding slag, improving paint adhesion and ensuring a durable, high-quality finish. Radiators and other components are tested under simulated harsh operating conditions to verify leakage prevention. All flange surfaces are precision-machined and equipped with grooved positioning structures, and high-quality oil- and ozone-resistant acrylic rubber gaskets are used to prevent leaks. The upper and lower tank sections are normally bolted together, with welded sealing available upon request.

Cooling System and Accessories: Transformers are designed for ONAN/ONAF cooling. Under forced-air operation, they can run at full rated capacity; under natural oil-air cooling, loading is typically up to 67% of rated capacity. Radiators are arranged compactly and efficiently, with fans mounted for horizontal or vertical airflow. The conservator features an oil-resistant, airtight bladder, fully isolating transformer oil from air to maintain a sealed insulation system. Stainless-steel corrugated conservators (internal- or external-oil type) are also available, offering maintenance-free operation and high reliability.

Leveraging advanced technology and a comprehensive quality assurance system, our transformers are engineered and manufactured for low partial discharge, low losses, low noise, and high reliability.

Service Conditions

Installation type: outdoor

Ambient temperature: Max. +40°C / Min. −30°C

Altitude: ≤ 1,000m (temperature-rise correction required above 1,000m)

Relative humidity: ≤ 90% (at 25°C)

Installation environment: free from corrosive gases and excessive contamination

Technical Specifications

Item	Specifications
Voltage class	35kV~110kV
Tap-changing method	On-Load Tap Changer (OLTC) or Off-Circuit Tap Changer (OCTC)
Rated capacity	315kVA~63,000kVA
Frequency	50Hz
Number of phases	Three-Phase
Vector group	According to Chinese standards and customer specifications
Short-circuit impedance	According to Chinese standards and customer specifications
Service conditions	According to Chinese standards and customer specifications
Cooling method	ONAN / ONAF
Insulation level	According to Chinese standards

Type Designation

S □ □ - □ □ - □ / □ □

S
Three-phase

F
Forced-air cooling
(omitted for self-cooled units)

S
Three-winding
(omitted for two-winding units)

Z
On-load tap changer
(omitted for off-circuit tap changing)

Protection designation (normally omitted)
TH: Tropical
TA: Dry tropical climate

HV voltage class

Rated capacity(kVA)

Performance class
(11 or as specified by customer)

10 kV SC(B)10/SC(B)11/SC(B)12 Series Cast Resin Dry-Type Transformers

The SC(B)10, SC(B)11 and SC(B)12 series cast resin dry-type transformers provide a reliable and environmentally friendly alternative to oil-immersed distribution transformers. They are ideally suited for urban power networks and demanding applications such as high-rise buildings, commercial centers, healthcare facilities, transportation hubs, underground substations and other critical infrastructure.

Product Features

Economical Design

1. Compact footprint
2. No special safety systems required, such as fire detection equipment
3. Maintenance-free operation
4. Long service life
5. Installation close to load centers, reducing cable losses and feeder length
6. Optimized design through continuous innovation and advanced materials

Safety and Environmental Performance

1. Environmentally friendly design
2. No risk of leakage of flammable or polluting substances
3. Safe and clean manufacturing process in a closed production system
4. Suitable for humid and polluted environments
5. No fire hazard
6. Flame-retardant and self-extinguishing insulation system
7. Excellent short-circuit withstand capability
8. High overload capability

Extremely low partial discharge levels
Special coil finishing process for a smooth winding surface
No hazardous gas emission in the event of fire or arcing
Step-lap core design for low no-load loss, low no-load current and low noise
Special segmented cylindrical winding design
LV windings manufactured from copper foil conductors
High overload capability enabled by superior thermal capacity
Class F insulation system with an average winding temperature rise not exceeding 100K

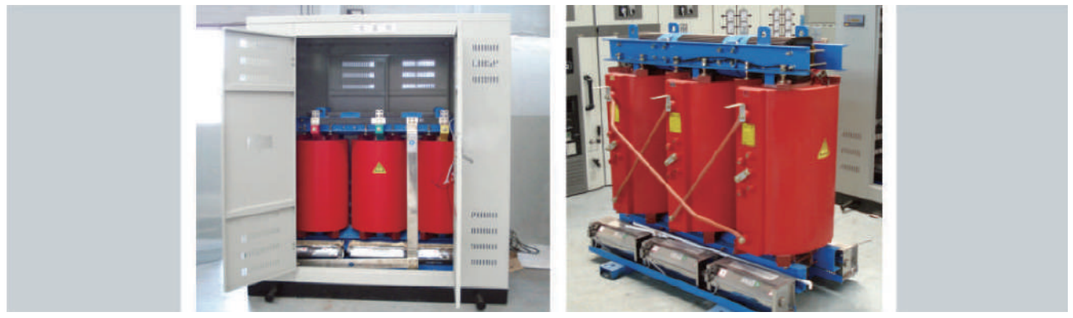
Structural Features

The core features a fully mitred step-lap construction, ensuring low losses, low noise and optimized magnetic performance. Automated cutting and stacking processes provide high dimensional accuracy and consistent assembly quality.

Core Performance

1. High-permeability grain-oriented silicon steel with low magnetostriction is used to minimize operating noise.
2. All core laminations are processed on fully automated cutting lines for maximum precision. SC(B) transformers incorporate a single-sheet, four-step step-lap core design, further reducing losses and noise.
3. An advanced steel tie-plate and banding structure replaces conventional clamping systems, providing uniform core compression and enhanced mechanical stability. Disc springs maintain constant clamping force throughout the transformer's service life.

HV windings are manufactured using a segmented cylindrical winding process and vacuum-cast with epoxy resin. The robust winding design provides superior mechanical strength.



Winding Design

1. The HV windings are made of high-quality oxygen-free copper conductors, reinforced with glass fiber and cast with resin-filled insulation. Embedded resin cooling ducts are provided. The windings are vacuum impregnated and cast, then cured according to a defined temperature profile. The HV winding adopts a special sectional cylindrical structure with multi-layer axial cooling ducts for efficient heat dissipation.

The LV winding adopts a foil-type structure and is manufactured using the same process.

Winding Manufacturing Process

1. The LV winding is made of copper foil and resin-prepreg insulation layers. After winding, the coil is cured in an oven to form a mechanically robust winding with excellent short-circuit withstand capability.
2. The efficient design, high-quality materials and advanced casting technology of our cast resin dry-type transformers ensure low partial discharge performance.
3. The windings are preheated to the specified casting temperature, while the resin mixture is prepared in a continuous processing system. The resin components are mixed only immediately before casting. The preheated windings are then transferred to the vacuum casting chamber. Once the specified vacuum level is reached, the resin is poured into the mould. At this stage, the mixed resin has very low viscosity, allowing it to fill fine gaps and minimize partial discharge. After casting, the windings are cured to achieve optimal electrical and mechanical properties.

Winding Performance

1. Impulse Withstand Capability: For SC(B) transformers, the HV winding adopts a special sectional cylindrical structure. Optimized interlayer voltage distribution improves withstand capability against lightning and switching impulse overvoltages, delivering higher performance than conventional sectional cylindrical windings.
2. Electric Field Distribution: Wire-wound cast resin windings use high-quality oxygen-free copper conductors cold-drawn into rectangular profiles. Rounded conductor edges eliminate sharp points and burrs, ensuring uniform electric field distribution and low field distortion. Together with the vacuum casting process, this optimized conductor design enables low partial discharge performance of ≤5 pC.
3. Heat Dissipation: High-purity resin and glass fiber composite insulation provides excellent electrical and mechanical strength. With a surface insulation thickness of only 3mm~4mm, SC(B) series windings achieve efficient heat dissipation. Multi-layer axial cooling ducts provide effective cooling surfaces for the conductors, ensuring balanced heat generation and heat dissipation throughout the winding.
4. Short-Circuit Withstand Capability: SC(B) transformers use wire-wound sectional cylindrical or cylindrical windings. During vacuum casting, resin fully penetrates the layers, turns and sections in a single process. After curing, the resin, conductors and glass fiber form a solid integrated structure, providing excellent short-circuit withstand capability.

Overload Capability

The service life of a dry-type transformer is closely related to the overload conditions experienced during operation. Overloads may cause temperature fluctuations and accelerate thermal aging of the winding insulation.

When the normal load is below rated capacity, the transformer can withstand certain overload conditions without affecting its service life. The permissible overload level and duration depend on the initial load factor and average ambient temperature.

The transformer is designed and manufactured in accordance with IEC 60726 and GB 1094, and is suitable for operation at rated power under the following normal ambient conditions:

Max. temperature: +40℃

Daily avg. temperature: +30℃

Annual avg. temperature: +20℃

Unless otherwise specified, the reference ambient temperature is +20℃.

Accessories

Enclosure

Standard dry-type transformers are supplied without an enclosure, with a protection degree of IP00. Upon request, IP20 or IP23 enclosures can be provided for enhanced safety and protection.

The IP20 enclosure is designed to prevent accidental contact with live parts and the ingress of solid objects larger than 12mm. Perforated steel panels are used in the upper and lower ventilation areas to ensure effective cooling airflow.

The IP23 enclosure provides additional protection against water drops falling at an angle of up to 60° from the vertical. It features perforated ventilation panels and a solid steel top cover. All enclosures are made of coated steel sheets. Front and rear access doors allow easy connection of HV tapping links, while cable entry openings are provided on the base plate for convenient installation.

Overtemperature Protection

Each transformer is equipped with a temperature monitoring and protection device to protect the windings against overheating. Temperature sensors embedded in the LV winding provide signals to the digital temperature controller. When the winding temperature changes, the controller displays the updated temperature and automatically controls fan start/stop and overtemperature alarm functions, ensuring reliable transformer protection.

Forced-Air Cooling

Upon request, the transformer can be equipped with low-noise axial fans. When the fans are in operation, the transformer output capacity can be increased by up to 50%, making it suitable for extended intermittent overload operation. To avoid frequent fan starts, fan operation is automatically controlled by the temperature controller.

Technical Specifications

6/10kV Type 10 Dry-Type Off-Circuit Tap-Changing Distribution Transformers

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss/Insulation Class (W)			No-Load Current (%)	Short-Circuit Impedance (%)
						B(100℃)	F(120℃)	H(145℃)		
30	6 6.3 10 10.5 11	±5 ±2x2.5	0.4	Dyn11 Yyn0	190	670	710	760	2.0	4.0
50					270	940	1000	1070	2.0	
80					370	1290	1380	1480	1.5	
100					400	1480	1570	1690	1.5	
125					470	1740	1850	1980	1.5	
160					540	2000	2130	2280	1.3	
200					620	2370	2530	2710	1.3	
250					720	2590	2760	2960	1.1	
315					880	3270	3470	3730	1.1	
400					980	3750	3990	4280	1.0	
500					1160	4590	4880	5230	1.0	
630					1340	5530	5880	6290	0.85	
630					1300	5610	5960	6400	0.85	4.5
800					1520	6550	6960	7460	0.85	
1000					1770	7650	8130	8760	0.85	
1250					2090	9100	9690	10300	0.85	
1600					2450	11000	11700	12500	0.85	
2000					3050	13600	14400	15500	0.7	
2500					3600	16100	17100	18400	0.7	
1600					2450	12200	12900	13900	0.85	5
2000					3050	15000	15900	17 100	0.7	
2500					3600	17700	18800	20200	0.7	

6/10kV Type 11 Dry-Type Off-Circuit Tap-Changing Distribution Transformers

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss/Insulation Class (W)			No-Load Current (%)	Short-Circuit Impedance (%)
						B(100℃)	F(120℃)	H(145℃)		
30	6 6.3 10 10.5 11	±5 ±2x2.5	0.4	Dyn11 Yyn0	170	670	710	760	1.9	4.0
50					240	940	1000	1070	1.9	
80					330	1290	1380	1480	1.5	
100					360	1480	1570	1690	1 5	
125					420	1740	1850	1980	1.3	
160					480	2000	2130	2280	1.3	
200					550	2370	2530	2710	1.1	
250					640	2590	2760	2960	1.1	
315					790	3270	3470	3730	1.0	
400					880	3750	3990	4280	1.0	
500					1040	4590	4880	5230	0.9	
630					1200	5530	5880	6290	0.9	
630					1170	5610	5960	6400	0.9	4.5
800					1360	6550	6960	7460	0.8	
1000					1590	7650	8130	8760	0.8	
1250					1880	9100	9690	10300	0.8	
1600					2200	11000	11700	12500	0.7	
2000					2740	13600	14400	15500	0.6	
2500					3240	16100	17100	18400	0.6	
1600					2200	12200	12900	13900	0.7	5
2000					2740	15000	15900	17 100	0.6	
2500					3240	17700	18800	20200	0.6	

6/10kV Type 12 Dry-Type Off-Circuit Tap-Changing Distribution Transformers

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss/Insulation Class (W)			No-Load Current (%)	Short-Circuit Impedance (%)
						B(100℃)	F(120℃)	H(145℃)		
30	6 6.3 10 10.5 11	±5 ±2x2.5	0.4	Dyn11 Yyn0	150	670	710	760	1.7	4.0
50					215	940	1000	1070	1.7	
80					295	1290	1380	1480	1.3	
100					320	1480	1570	1690	1.3	
125					375	1740	1850	1980	1.1	
160					430	2000	2130	2280	1.1	
200					495	2370	2530	2710	0.9	
250					575	2590	2760	2960	0.9	
315					705	3270	3470	3730	0.8	
400					785	3750	3990	4280	0.8	
500					930	4590	4880	5230	0.7	
630					1070	5530	5880	6290	0.7	
630					1040	5610	5960	6400	0.7	4.5
800					1210	6550	6960	7460	0.6	
1000					1410	7650	8130	8760	0.6	
1250					1670	9100	9690	10300	0.6	
1600					1960	11000	11700	12500	0.5	
2000					2440	13600	14400	15500	0.4	
2500					2880	16100	17100	18400	0.4	
1600					1960	12200	12900	13900	0.5	5
2000					2440	15000	15900	17 100	0.4	
2500					2880	17700	18800	20200	0.4	

10kV SC(B)H15/SC(B)H16 Series Amorphous Alloy Cast Resin Dry-Type Transformers

Based on proven cast resin dry-type transformer technology, the SC(B)H15/SC(B)H16 series features an amorphous alloy core, delivering high performance, safety, reliability and environmental efficiency. With significantly reduced no-load and load losses, the series provides an advanced energy-efficient solution for modern power distribution systems. It is suitable for installation close to load centers and high-density urban networks.

Featuring flame-retardant, self-extinguishing, moisture-resistant, crack-resistant and maintenance-free performance, the transformer is widely used in high-rise buildings, commercial centers, metro systems, railway stations, ports, airports and underground substations. It is particularly suitable for applications with stringent fire and explosion safety requirements.

Product Features

The transformer core is wound from amorphous alloy strip and designed with a rectangular cross-section in a three-phase five-limb or three-phase three-limb structure. Compared with conventional dry-type transformers, no-load loss is reduced by approximately 75%, delivering significant energy savings.

The LV winding is made of copper foil, while the HV winding is vacuum cast with epoxy resin and cured at high temperature, providing high mechanical strength and excellent short-circuit withstand capability.

◎ Flame-retardant, explosion-resistant and pollution-free, with high fire safety
◎ Compact design, easy installation and maintenance-free operation
◎ Low partial discharge, high insulation level and long service life
◎ Excellent resistance to moisture, mould and salt fog, with no cracking
◎ High overload capability, supporting long-term safe operation at 120% load

Technical Specifications

SCBH15 Amorphous Alloy Dry-Type Transformer

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss/Insulation Class (W)			No-Load Current (%)	Short-Circuit Impedance (%)
						B(100℃)	F(120℃)	H(145℃)		
30	6 6.3 10 10.5 11	±5 ±2x2.5	0.4	Dyn11 Yyn0	70	670	710	760	1.6	4.0
50					90	940	1000	1070	1.4	
80					120	1290	1380	1480	1.3	
100					130	1480	1570	1690	1.2	
125					150	1740	1850	1980	1.1	
160					170	2000	2130	2280	1.1	
200					200	2370	2530	2710	1.0	
250					230	2590	2760	2960	1.0	
315					280	3270	3470	3730	0.9	
400					310	3750	3990	4280	0.8	
500					360	4590	4880	5230	0.8	
630					420	5530	5880	6290	0.7	
630					410	5610	5960	6400	0.7	4.5
800					480	6550	6960	7460	0.7	
1000					550	7650	8130	8760	0.6	
1250					650	9100	9690	10300	0.6	
1600					760	11000	11700	12500	0.6	
2000					1000	13600	14400	15500	0.5	
2500					1200	16100	17100	18400	0.5	
1600					760	12200	12900	13900	0.6	5
2000					1000	15000	15900	17 100	0.5	
2500					1200	17700	18800	20200	0.5	

SCBH16 Amorphous Alloy Dry-Type Transformer

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss/Insulation Class (W)			No-Load Current (%)	Short-Circuit Impedance (%)
						B(100℃)	F(120℃)	H(145℃)		
30	6 6.3 10 10.5 11	±5 ±2x2.5	0.4	Dyn11 Yyn0	70	635	675	720	1.6	4.0
50					90	895	950	1015	1.4	
80					120	1225	1310	1405	1.3	
100					130	1405	1490	1605	1.2	
125					150	1655	1760	1880	1.1	
160					170	1900	2025	2165	1.1	
200					200	2250	2405	2575	1.0	
250					230	2460	2620	2810	1.0	
315					280	3105	3295	3545	0.9	
400					310	3560	3790	4065	0.8	
500					360	4360	4635	4970	0.8	
630					420	5255	5585	5975	0.7	
630					410	5330	5660	6080	0.7	4.5
800					480	6220	6615	7085	0.7	
1000					550	7265	7725	8320	0.6	
1250					650	8645	9205	9850	0.6	
1600					760	10495	11145	11950	0.6	
2000					1000	12920	13725	14780	0.5	
2500					1200	15340	16310	17525	0.5	
1600					760	11660	12310	13200	0.6	5
2000					1000	14270	15160	16250	0.5	
2500					1200	16870	17940	19270	0.5	

35kV Cast Resin Dry-Type Transformer

This series is designed to step down 35kV grid power directly to 400V distribution voltage, or to other medium- and low-voltage levels for end users. Key advantages include:

◎ Reduced footprint and simplified multi-stage substation construction

◎ Lower project investment and improved economic efficiency

◎ Reduced 10kV transmission and transformation stages and low operation and maintenance costs

◎ High-voltage, low-current transmission instead of low-voltage, high-current transmission, reducing line losses and operating costs

◎ Direct 35kV supply to load centers, effectively improving power supply reliability

Product Features

The SC(B)10 series 35 kV dry-type transformers are low-loss, off-circuit tap-changing transformers designed in accordance with China standards.

- ◎ High performance and low losses
- ◎ Low-noise operation, achieved through high-quality silicon steel laminations and optimized flux density to reduce magnetostriction
- ◎ Enhanced impulse withstand capability, supported by optimized HV winding design and improved interlayer voltage and capacitance distribution; Optimized electric field distribution, contributing to lower partial discharge levels
- ◎ Optional temperature monitoring and forced-air cooling systems, with automatic fan operation under high-load conditions to improve overload capability

Technical Specifications

35kV SC(B)10 Series Off-Circuit Tap-Changing Distribution Transformer

Rated Capacity (kVA)	HV Voltage (kV)	HV Tapping Range (%)	LV Voltage (kV)	Vector Group	No-Load Loss (W)	Load Loss/Insulation Class (W)			No-Load Current (%)	Short-Circuit Impedance (%)
						B(100℃)	F(120℃)	H(145℃)		
50	35-38	±5 ±2x2.5	0.4	Dyn11 Yyn0	450	1340	1420	1520	2.3	6.0
100					630	1970	2090	2230	2.0	
160					790	2650	2810	3000	1.5	
200					880	3130	3320	3550	1.5	
250					990	3580	3800	4060	1.3	
315					1170	4250	4510	4820	1.3	
400					1370	5100	5410	5790	1.1	
500					1620	6270	6650	7070	1.1	
630					1860	7250	7690	8230	1.0	
800					2160	8600	9120	9760	1.0	
1000					2430	9860	10400	11100	0.75	
1250					2830	12000	12700	13600	0.75	
1600					3240	14600	15400	16500	0.75	
2000					3820	17200	18200	19500	0.75	
2500					4450	20600	21800	23300	0.75	

Class H Vacuum Impregnated Dry-Type Transformer

Eco-friendly Design

Fire safety and environmental protection are increasingly important criteria in the selection of energy products. For many applications, dry-type transformers offer a safe and sustainable alternative to oil-immersed transformers. A key focus in dry-type transformer design is reducing flammability. Advanced manufacturing processes also support the recycling and reuse of valuable materials such as copper, which can be difficult to recover from conventional cast resin dry-type transformers. Low fire load and high material recyclability are key indicators of advanced dry-type transformer technology.

Overload Capability

VEICHI vacuum impregnated dry-type transformers offer excellent overload capability. The transformer adopts an open ventilated dry-type structure with thin insulation layers. Vertical and horizontal cooling ducts are provided inside the windings, ensuring efficient heat dissipation. The insulation system is rated Class H (180℃), while the temperature rise is designed below Class F (155℃) limits, providing a large thermal margin under overload conditions. In addition, extensive use of Class C (220℃) insulation materials further enhances overload withstand capability.

Flame-Retardant Performance

Thanks to advanced flame-retardant and non-toxic materials, VEICHI dry-type transformers are highly resistant to ignition from external fire sources. Localized burning produces minimal smoke and is unlikely to damage the main windings, making the transformers well suited for demanding applications such as metro systems, ships and underground buildings. Fire performance tests conducted by a French national laboratory have shown that vacuum-impregnated dry-type transformers using this technology are resistant to ignition under short-term fire exposure and remain stable under prolonged fire conditions. In an 800℃ test environment, the transformer windings produced only limited flame and smoke after 130 minutes and self-extinguished within seconds.

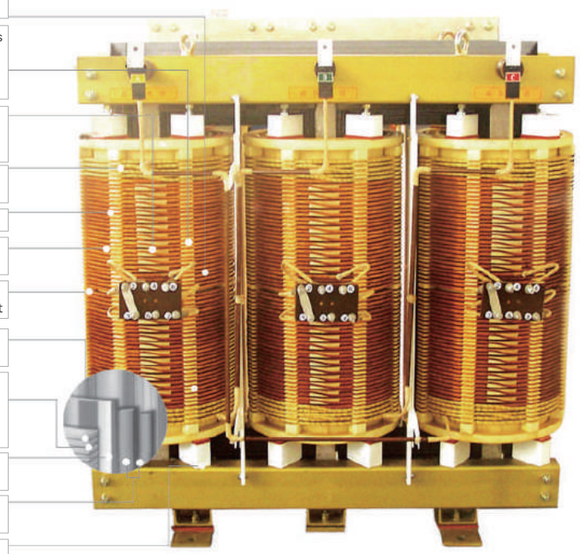
Test results confirm compliance with:

Environmental class: E2

Climatic class: C2

Fire behaviour class: F1

Product Features



Core Structure

The energy-efficient vacuum-impregnated dry-type transformer features a three-phase, three-limb core. The core is manufactured from high-grade grain-oriented cold-rolled silicon steel sheets using advanced core cross-cutting equipment and a four-step lap-joint structure. This design reduces harmonic-induced magnetostriction, lowers no-load current and minimizes noise. The core surface is coated with Class H protective varnish for long-term corrosion protection throughout the transformer's service life.

Core Insulation

Moisture-resistant Class H insulation boards ensure high insulation resistance. Class H silicone rubber spacer blocks are installed at the base to reduce vibration and prevent resonance with the transformer base.

Core Clamping Structure

The core clamps are manufactured from high-quality cold-rolled steel plate instead of channel steel. Roll forming, welding, sandblasting and electrostatic powder coating ensure a clean, robust and reliable structure.

Spacer Boards

Spacer boards are installed between the core and LV winding to ensure accurate positioning and divide the air gap. This helps interrupt the propagation path of symmetrical acoustic waves and effectively reduces transformer noise.

LV Winding

The LV winding is made of high-quality reinforced oxygen-free copper conductors and adopts a patented reinforced layer-winding structure. Key advantages include:

1. Integrated cooling ducts for efficient heat dissipation
2. Easy installation of end insulation with enhanced mechanical strength
3. Polyester-imide end insulation for improved dielectric performance
4. Multiple reinforced conductors with inter-conductor insulation to reduce eddy-current losses

HV Winding

1. For large-capacity dry-type transformers, the HV winding adopts a disc-type structure. Each coil disc is wrapped with insulation. Low turn-to-turn voltage stress and a uniform continuous insulation system ensure low partial discharge of less than 5 pC. Cooling ducts between discs provide excellent heat dissipation.
2. For smaller-capacity dry-type transformers, the HV winding adopts a semi-encapsulated structure. Optimized interlayer voltage distribution improves impulse withstand capability against overvoltages, significantly reduces interlayer voltage and lowers electric field intensity. The design provides excellent dust resistance, high crack resistance, efficient heat dissipation and flexible sectional winding options.

Insulating Cylinder

The HV and LV windings are separated by a high-strength polyester-imide insulating cylinder. It offers excellent mechanical strength and a dielectric withstand level of up to 18kV/mm. Through a special manufacturing process, the electric field distribution is optimized, enabling the transformer to easily meet the specified dielectric withstand requirements.

Insulation System

DuPont™ Nomex® Insulation Paper

1. Electrical Performance

Dense Nomex® products can withstand short-term electrical stress of 18kV/mm~ 40kV/mm without additional varnish or resin treatment.

Their low dielectric constant helps achieve a more uniform electric field distribution between insulation and cooling media.

Nomex® also features low dielectric loss, high resistivity even at 250°C, and excellent dielectric strength under power-frequency (50/60Hz) and impulse conditions.

2. Mechanical Strength

Nomex® products offer high strength, resilience and flexibility, with excellent resistance to tearing and abrasion.

3. Thermal Stability

Temperatures below 200°C have little or no effect on the electrical and mechanical properties of Nomex®. Even under continuous exposure at 220°C, it can maintain effective performance for at least 10 years.

4. Chemical Compatibility

Nomex® is highly resistant to most solvents, acids and alkalis. It is compatible with various insulating varnishes, oils, resins, fluorocarbons and refrigerants. It is also resistant to damage from insects, fungi and mould.

5. Low-Temperature Performance

Thanks to its unique polymer structure, Nomex® performs reliably in cryogenic applications. At temperatures down to 77K, Nomex® 410 paper and Nomex® 993/ 994 laminates maintain tensile strength values exceeding those at room temperature.

6. Moisture Resistance

At 95% relative humidity, dense Nomex® papers and laminates retain about 90% of their dielectric strength in the dry state, while many mechanical properties are actually improved.

7. Radiation Resistance

Nomex® products are highly resistant to ionizing radiation. Exposure to 800Mrad / 8MGy has little effect, and effective mechanical and electrical properties are maintained even after repeated exposure.

8. Non-Toxic and Flame Resistant Nomex® products have no known toxic effects on humans or animals. They do not melt and, with a limiting oxygen index greater than 20.8 at 220°C, they do not support combustion in normal air.

Extensive Use of Ceramic Components

Ceramic spacers are used for HV coil insulation, increasing creepage distance and improving electrical safety. Compared with cast resin products, the combustible material content is reduced to only one tenth.

Class H Solvent-Free Insulating Varnish

Class H insulating varnish is used, with key raw materials sourced from imported materials. The varnish is non-toxic and environmentally friendly. Even at 93% relative humidity, it maintains the dielectric strength achieved under fully dry conditions.

Service and Support

VEICHI Electric has established an integrated global service network through its innovative "Region + Industry" marketing strategy, which synergizes cross-sector resources and distribution channels to deliver comprehensive solutions. With permanent business and technical support teams strategically located across 22 major Chinese cities and overseas operations including Indian subsidiaries, the company is supported by an extensive network of 334 domestic and international distributors that ensure seamless market coverage. By consistently delivering superior product quality backed by professional technical support and service excellence, VEICHI Electric continues to enhance its global brand reputation while driving sustainable international growth through reliable, customer-centric solutions.