

ZTT GROUP

With decades of experience and a strong positioning in high-tech market segments, ZTT is active in the development, design, production, supply and installation of wide application ranges in telecom, power, renewable energy and oil & gas.

ZTT was listed on the Shanghai Stock Exchange (Stock Code: 600522) on Oct 24, 2002. ZTT has broken through the \$6.86 billion mark in revenue in 2017, and is becoming a truly global company which products supplied in 147 countries, with overseas branch offices in 58 countries, registered subsidiaries in 6 countries, 60 subsidiaries, 7 research & development centers and over 13,000 employees. Product quality and innovation are the hallmarks of ZTT approach, in order to implement its global marketing strategy, ZTT has established strong relationships with the major global partners in all industries it operates in, realizing projects often customized according to customer specification for hundreds of global power utilities and telecom operators.

ZTT is committed to better your life. Therefore, ZTT has always paid great strategic attention to research & development with a view to providing with innovative solutions. ZTT will try efforts to be your best partner to realize your dreams, and achieve common values together with you.



Transformer





ZTT Focuses on Precise Manufacturing

ZTT Cable Comprehensive Solution Provider for Power Grids

Company Profile



ZTT Transformer owns complete amorphous industrial chain (Amorphous strip, Amorphous core and Amorphous alloy transformer). The main products are 35KV and below transformers including Oil-immersed transformer, Dry-type transformer, Box-type substation and other products. The annual production capacity is up to 10 million kVA and among them are the dry-type and oil-immersed transformers that were listed in May 30, 2016 as the national energy conservation government procurement inventory. The aluminum zirconium alloy winding transformer, high overload capacity transformer and amorphous alloy iron core anti-short-circuit capability transformer are identified by experts of China Electricity Council in March 2017, the three types of energy-saving products are identified by the expert group as the international advanced level.

ZTT Transformer is a qualified supplier of State Grid and China Southern Power Grid. We have successfully provided various transformers and complete sets of equipment for State Grid Jilin, Henan, Shandong, Sichuan, Anhui, Hebei, Heilongjiang, Chongqing, Jiangsu, Shanxi, etc.

In 2016, ZTT Transformer won the bidding of dry-type transformers for east and Xinsong converter stations in

the China Southern Power Grid ± 800 kV HVDC project from northwest Yunnan to Guangdong.

The products of ZTT Transformer are not only widely used in State Grid and Southern Grid but also in thermal power, wind power, photovoltaic power generation, rail transit, petrochemical industry and other special fields. In April 2017, the PSCD-20000KVA transformer, which our company provides for CNOOC (China) co., LTD, has been a maximum capacity transformer for the domestic ocean Marine in China so far.

The company has been adhering to the production process of transformer for more than 40 years and the pursuit of quality. From the design, production, manufacture and test, the whole process implements Zhongtian precision manufacturing culture. Zhongtian focuses on creating products with high quality. In addition, the company has jointly established the production, learning and research base with many colleges and universities. They have signed the strategic cooperation agreement with Shenyang transformer research institute, Suzhou electric power research institute and American Dow enterprise to develop new products in long-term.



TRANSFORMER SERIES

TRANSFORMER DESIGN, EQUIPMENT AND MANUFACTURING PROCESS

Cores

The company owns the advanced silicon steel automatic shearing equipment made by Xi an Qiyuan with high shear precision and perfect process. All cores are made up of a five-step process and the joints are staggered, which reduces the noise level, no-load current and no-load loss and the performance is excellent and stable.



Vacuum casting

Stable product quality cannot be separated from advanced production equipment, the selection of equipment follows the principle of "import of key equipment, domestic of Priority equipment ", we have vacuum pouring lines made by HEDRICH in Germany.



Windings

The company owns the advanced silicon steel automatic shearing equipment made by Xi an Qiyuan with high shear precision and perfect process. All cores are made up of a five-step process and the joints are staggered, which

reduces the noise level, no-load current and no-load loss and the performance is excellent and stable.



Body drying and vacuum filling

The company has domestic advanced HS. VDH - 35 II vacuum drying equipment and HS. VDR - 10 II vacuum oil injection equipment of Shenyang huisi vacuum technology development Co., Ltd.

process which realizes unattended automatic drying in the true sense.

The vacuum drying equipment uses the method of variable pressure drying process and compared to conventional vacuum drying, it can reduce the drying time by an estimated 30%-40%. It has reliable performance, high efficiency and it is energy saving. It applies automatic control during the whole

The vacuum filling equipment process realizes the automatic control of the computer, the control system is safe and reliable, and the oil is automatically quantified in the vacuum state, so that the product quality is guaranteed.



HS.VDH-35 II Vacuum drying equipment



HS.VDR-10 II Vacuum filling equipment

Tests of transformer

We can guarantee that the first - class products have the best production test equipment.

The company has domestic advanced NKT line transformer test station, which is the one of the few domestic factories where no-load and load, induction, power frequency tests with one-off wiring project, one-click operation, automatic control and records can be done.

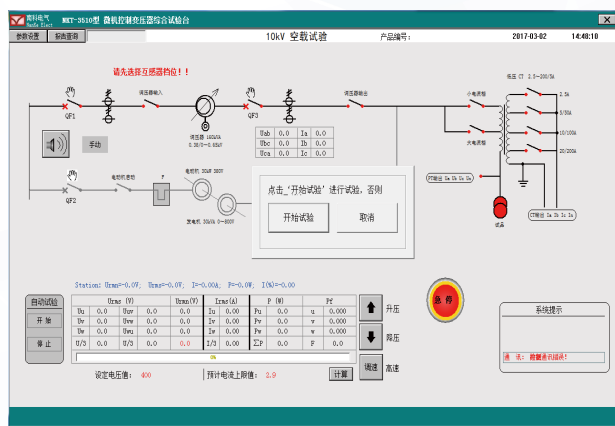
NKT system has the first automatic temperature rise test

function in China. In the test process, automatic tracking function can be set. The system also has automatic recording test voltage, current, power and temperature data of each channel.

In addition, our company has a large transformer noise test hall. (6000×15000)



NKT Pipeline transformer test station



Interface of software



Noise test hall

THREE-DIMENSIONAL ROLL CORE OIL-IMMERSED TRANSFORMER

- The three-phase magnetic circuit is completely symmetrical, and the magnetic circuit is the shortest.
- Three-phase balance, low no-load loss, low no-load current, low noise.
- Usage of silicon steel material saves 20% iron core and 3% copper when compared with the ordinary laminated core product.,
- Production and operation cost of double excellent products.



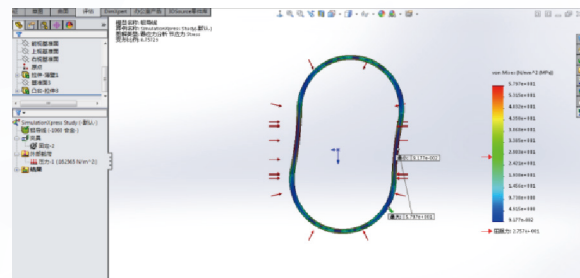
Technical parameters of S13-M.RL-30~2500/10 series full sealed off-circuit tap-changer distribution transformer

Sr kVA	Voltage combination			Vector group	P ₀ W	P _K W	I ₀ %	U _K %
	HV kV	Tapping range%	LV kV					
30	6 6.3 10 10.5 11	±2×2.5or ±5.0	0.4	Dyn11 Yzn11 Yyn0	80	600	0.30	4.0
50					100	870	0.24	
63					110	1040	0.23	
80					130	1250	0.22	
100					150	1500	0.21	
125					170	1800	0.20	
160					200	2200	0.19	
200					240	2600	0.18	
250					290	3050	0.17	
315					340	3650	0.16	
400				410	4300	0.16		
500				480	5150	0.16		
630				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	4.5				
2500	1830	21200	0.10					

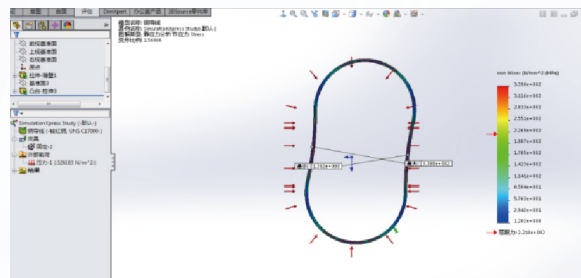
ALUMINUM-ZIRCONIUM ALLOY WINDING OIL-IMMERSED TRANSFORMER

Product Characteristics

- The heat resistant aluminum-zirconium alloy wire runs at 150°C high temperature and the wire strength loss is small.
 - The optimized structure has excellent dynamic and thermal stability and high reliability.
 - Compared with the same type of copper winding transformer, the total direct material cost is reduced by 20%.
- The theoretical model of self support for aluminum zirconium alloy wires and copper wires subjected to short-circuit electric force is established respectively, and the stress analysis is carried out. The results are shown in the following figures and tables.



Short circuit stress analysis of aluminum-zirconium alloy wire

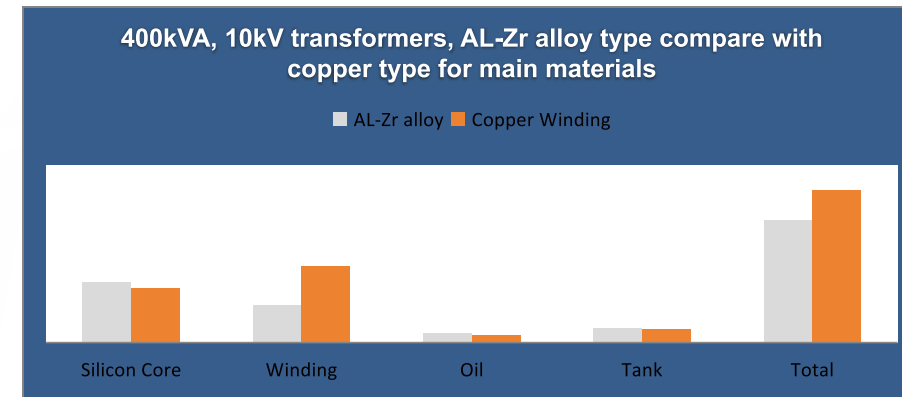


Short circuit stress analysis of copper wire

Wire material	Maximum radial stress N/mm ²	Allowable stress (N/mm ²)	Yield stress (N/mm ²)	Margin
Al-Zr alloy	87.97	90	100	1.02
Copper	339.8	153	170	0.45

Conclusion: The anti short circuit capability of aluminum-zirconium alloy winding is significantly better than that of copper winding transformer

Under the same premise of performance index, Al-Zr alloy transformer can operated more reliable than copper windings transformer, and the cost of materials is about 19% lower than that of copper winding transformer, The economic benefit is obvious. Under the premise of same material cost, the performance index of the aluminum zirconium alloy transformer can be more than 14, and the energy saving and emission reduction effect is obvious.



Technical parameters of S13-30~2500/10 series off-circuit tap changer distribution transformer

Sr kVA	Voltage combination			Vector group	P ₀ W	P _K W	I ₀ %	U _K %
	HV kV	Tapping range%	LV kV					
30	6 6.3 10 10.5 11	±2×2.5or±5.0	0.4	Dyn11 Yyn0	80	600	1.5	4.0
50					100	870	1.30	
63					110	1040	1.20	
80					130	1250	1.10	
100					150	1500	1.00	
125					170	1800	0.90	
160					200	2200	0.80	
200					240	2600	0.60	
250					290	3050	0.50	4.5
315					340	3650	0.40	
400					410	4300	0.40	
500					480	5150	0.40	
630					570	6200	0.40	
800					700	7500	0.40	
1000					830	10300	0.40	
1250					970	12000	0.40	
1600	1170	14500	0.40	5.0				
2000	1550	18300	0.40					
2500	1830	21200	0.40	0.40	5.0			

AMORPHOUS ALLOY CORE OIL IMMERSED DISTRIBUTION TRANSFORMER

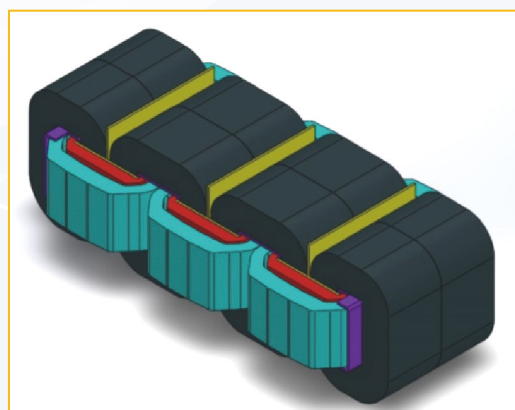
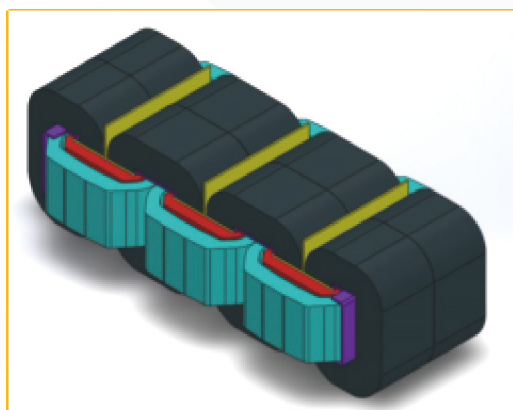
- The core is made of amorphous alloy material, suspension installation, and the product performance reaches the first grade energy efficiency standard.
- The axial heat dissipation oil channel is set inside windings, which is beneficial to dissipate heat.
- Corrugated oil tank is used to meet the requirements of thermal expansion and contraction of transformer oil.
- Compared with the S11 type products, the annual operation cost is reduced by about 23% on average and economic benefits

Advantage

- Stability of anti short circuit.
- Without dipping, simple process, reliable insulation.
- Which solves the problem that the amorphous alloy core vibrates violently by magnetic attraction and generates debris.
- The silicon steel frame itself is a part of the main magnetic circuit of transformer When transformer is running, it shares part of the main flux, so the overall structure of transformer is economical.



1-2 Transformer body model of anti short circuit amorphous alloy core



Red: LV winding; Cyan: HV winding; Purple: Silicon steel skeleton; Yellow: Epoxy board

Performance parameters of S(B)H type amorphous alloy core three-phase oil-immersed transformer

Sr kVA	Voltage combination			Vector group	P ₀ W	P _K W	I ₀ %	U _K %
	HV kV	Tapping range%	LV kV					
30	6 6.3 10 10.5 11	±2×2.5or ±5.0	0.4	Dyn11	33	600	1.70	4.0
50					43	870	1.30	
63					50	1040	1.20	
80					60	1250	1.10	
100					75	1500	1.00	
125					85	1800	0.90	
160					100	2200	0.70	
200					120	2600	0.70	
250					140	3050	0.70	
315					170	3650	0.50	
400					200	4300	0.50	
500					240	5150	0.50	
630					320	6200	0.30	4.5
800					380	7500	0.30	
1000					450	10300	0.30	
1250					530	12000	0.20	
1600					630	14500	0.20	5.0
2000	750	17400	0.20					
2500	900	20200	0.20					

OIL-IMMERSED DISTRIBUTION TRANSFORMER

This series of products conforms to the IEC 60076 1-5 power transformer. The series transformers take series major improvements on the material, process and structure, enabling the electrical properties of products reaching the advanced level of similar products in the world. The transformer has characteristics of high efficiency and low loss, saving a lot of power and operation cost. Social benefit is remarkable, recommended to be the national new products. Compared with ordinary oil immersed transformers, full sealed

transformers cancel the conservator and use corrugation tank wave wing as a cooling element instead of oil tubes. Corrugated tank is made of high quality cold rolled thin steel plate in a special production line manufacturing. Wave wing can expand and shrink with transformer oil volume expansion and shrinkage, so that the transformer inner is isolated from atmosphere, preventing and slowing down the oil degradation and insulation moisture, enhancing the reliability and normal operation maintenance.

Technical parameters of S11-30~2500/6~10 series oil-immersed distribution transformer

Sr kVA	Voltage combination			Vector group	P ₀ kW	P _K kW	I ₀ %	U _K %
	HV (kV)	Tapping range (%)	LV (kV)					
30	6 6.3 10 10.5	±2×2.5 or ±5.0	0.4	Dyn11 Yzn11 Yyno	0.1	0.6	1.5	4.0
50					0.13	0.87	1.3	
63					0.15	1.04	1.2	
80					0.18	1.25	1.1	
100					0.2	1.5	0.9	
125					0.24	1.8	0.8	
160					0.28	2.2	0.6	
200					0.34	2.6	0.5	
250					0.4	3.05	0.4	
315					0.48	3.65	0.4	
400					0.57	4.3	0.4	
500					0.68	5.15	0.4	
630				0.81	6.2	0.4		
800				0.98	7.5	0.4		
1000				1.15	10.3	0.4		
1250				1.36	12	0.4		
1600				1.64	14.5	0.4		
2000				1.95	17.2	0.4		
2500	2.35	20.5	0.4					
3150	2.78	24.1	0.4					

Technical parameters of S-50~1600/20(10) series oil-immersed distribution transformer

Sr kVA	Voltage combination			Vector group	P ₀ kW	P _K kW	I ₀ %	U _K %
	HV kV	Tapping range%	LV kV					
50	20 (10)	±2×2.5or ±5.0	0.4	Dyn11	0.13	0.96	1.3	5.5
80					0.18	1.37	1.2	
100					0.2	1.65	1.1	
125					0.24	1.98	1.0	
160					0.29	2.42	0.9	
200					0.34	2.86	0.8	
250					0.4	3.35	0.6	
315					0.48	4.01	0.5	
400					0.57	4.73	0.5	
500					0.68	5.66	0.5	
630					0.81	6.82	0.5	
800					0.98	8.25	0.5	
1000					1.15	11.33	0.5	
1250					1.36	13.2	0.5	
1600					1.66	15.95	0.5	

Technical parameters of SZ-200~1600/10 series on load tap change distribution transformer

Sr kVA	Voltage combination			Vector group	P ₀ kW	P _K kW	I ₀ %	U _K %
	HV kV	Tapping range%	LV kV					
200	6 6.3 10 10.5	±4×2.5	0.4	Dyn11 Yyno	0.38	2.9	1.0	4.0
250					0.44	3.42	0.9	
315					0.53	4.1	0.8	
400					0.64	4.95	0.6	
500					0.76	5.89	0.5	
630					0.96	7.26	0.5	
800					1.12	8.89	0.5	
1000					1.36	10.4	0.5	
1250					1.56	12.3	0.5	
1600					1.92	14.7	0.5	
2000					2.27	18.6	0.4	
2500					2.68	21.6	0.4	
3150					2.78	24.1	0.4	

Technical parameters of S11-50~2500/35 series low loss distribution transformer

Sr kVA	Voltage combination			Vector group	P ₀ kW	P _k kW	I ₀ %	U _k %
	HV kV	Tapping range%	LV kV					
50	35 38.5	±2×2.5or ±5.0	0.4	Dyn11 Yyn0	0.16	1.14	1.3	6.5
100					0.23	1.91	1.1	
125					0.27	2.26	1.0	
160					28	2.68		
200					0.34	3.16	0.95	
250					0.4	3.76		
315					0.48	4.53	0.85	
400					0.58	5.47		
500					0.68	6.58	0.65	
630					0.83	7.86		
800					0.98	9.4	0.60	
1000					1.15	11.5		
1250					1.4	13.9	0.55	
1600					1.69	16.6		
2000					1.99	19.7		
2500					2.36	23.2		



OIL-IMMERSED POWER TRANSFORMER

- All windings are designed with semi-rigid self-adhesive transposed wire, which can significantly improve the anti short-circuit capability of the transformer and reduce the temperature rise of hot spot.
- Take a variety of noise reduction measures, effectively reduce noise (noise is 5dB lower than national standard).
- The tank can withstand full vacuum and realize full vacuum filling, which lays the foundation for reliable long life operation of the transformer.
- The self-developed online monitoring system can connect all operating parameters of the transformer to the Internet of Things.



Technical parameters of SZ11-1000~31500/35 series on-load tap-changer power transformer

Sr kVA	Voltage combination			Vector group	P ₀ kW	P _k kW	I ₀ %	U _k %
	HV kV	Tapping range%	LV kV					
1000	35	±3×2.5	6.3 10.5	Yd11	1.16	11.55	0.5	6.5
1250					1.41	13.94		
1600					1.7	16.68		
2000					2.18	18.39		
1600					1.8	17.79		
2000					2.3	19.2		
2500	2.72	20.6	YNd11	0.40	8.0			
3150	3.23	24.7						
4000	3.87	29.1						
5000	4.64	34.2						
6300	5.63	36.7						
8000	7.87	40.6						
10000	9.28	48	3.00	10.0				
12500	10.95	56.8						
16000	13.1	70.3						
20000	15.5	82.7						
25000	18.3	97.8						
31500	21.8	116						

Technical parameters of S11-630~31500/35 series low loss power transformer

Sr kVA	Voltage combination			Vector group	P ₀ kW	P _K kW	I ₀ %	U _K %
	HV kV	Tapping range%	LV kV					
630	35	±2×2.5or ±5.0	3.15 6.3 10.5	Yd11	0.83	7.86	0.65	6.5
800					0.98	9.4		
1000					1.15	11.5		
1250					1.4	13.9	0.55	
1600					1.69	16.6	0.45	
2000					2.17	18.3		
2500					2.56	19.6		
3150	35~38.5	±2×2.5or ±5.0	3.15 6.3 10.5	Yd11	3.04	23	0.45	7.0
4000					3.61	27.3		
5000					4.32	31.3		
6300					5.24	35		
8000					7.2	38.4			0.35
10000	8.7	45.3						
12500	10	53.8	0.30					
16000	12.1	65.8						
20000	14.4	79.5						
25000	17	94	0.25	10.0				
31500	20.2	112						

DRY TYPE TRANSFORMER

Product features

- Energy saving ,low loss, maintenance-free
- Fire retardant and good adaptability to the environment
- It is exquisitely designed, small in size and easy to install
- Low noise, overload ability, anti-short circuit capability
- It has a strong insulating capacity when overvoltage
- It can be installed in bad environment
- When forced air cooling, the rated capacity can be increased by 50%

Product structure

1. Winding

The HV windings are made of copper wire and reinforced with glass fiber. They are cast without air bubble with imported high quality resin material under the vacuum condition.

According to the transformer capacity, the LV windings are made of copper wire or copper foil. The terminals are sealed with resin.

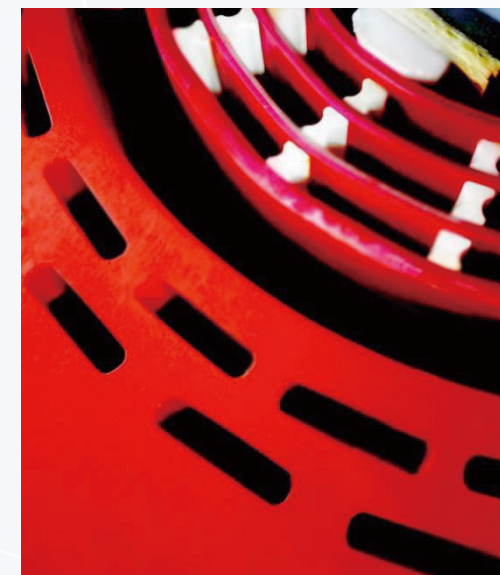
2. Core

The core is made of high magnetic low loss cold-rolled

grain oriented silicon steel sheet with 45°mitre joint and steps into the stack structure. Its no-load loss reduced by around 20% with small exciting current. With high strength insulating band, compact solid, noise is about 10~15dB lower than similar domestic products.

3.Assembly

HV & LV windings are assembled with iron cores, supported with elastic rubber pad. The whole has damping function and excellent resistance to short circuit impact performance.





SC(B)10~SC(B)11 series dry distribution transformer technical parameters

Sr kVA	Voltage combination			Vector group	SC(B)10 type 10kV dry transformer				SC(B)11 type 10kV dry transformer						
	HV kV	Tapping range %	LV kV		P _o kW	P _κ kW(120°C)	I _o %	U _κ %	P _o kW	P _κ kW(120°C)	I _o %	U _κ %			
30	6 10	±2×2.5 or±5.0	0.4	Dyn11 Yyn0	4.0	1.7	1.6	0.19	0.71	1.0	4.0	0.17	0.71	1.6	
50								0.27	1.00			0.24	1.00		
80								0.37	1.38			0.33	1.38		1.5
100								0.40	1.57			0.36	1.57		
125								0.47	1.85			1.4	1.3		
160								0.54	2.13						0.48
200								0.62	2.53			1.2	1.2		
250								0.72	2.76						0.64	2.76
315								0.88	3.47			1.1	1.1		
400					0.98	3.99	0.88	3.99							
500					1.16	4.88	1.0	0.9							
630					1.34	5.88			1.04	4.88					
630					1.30	5.96	6.0	0.9							
800					1.52	6.96			1.17	5.96					
1000					1.77	8.13	1.36	6.96							
1250					2.09	9.69	1.59	8.13							
1600					2.45	11.73	8.0	0.8							
2000					3.05	14.45			1.88	9.69					
2500	3.60	17.17	2.20	11.73											
1600	2.45	11.73	8.0	0.8											
2000	3.05	14.45			2.74	14.45									
2500	3.60	17.17	3.24	17.17											
3150	4.50	22.00	4.20	22.00											

Technical parameters of SC (B) 11 series 20kV dry type distribution transformers

Sr kVA	Voltage combination			Vector group	P _o	P _κ	I _o	U _κ
	HV (kV)	Tapping range(%)	LV (kV)		kW	kW(120°C)	%	%
50	20 22 24	±2×2.5 or ±5.0	0.4	Dyn11 Yyn0	0.30	1.23	2.0	6.0
100					0.48	1.99	1.8	
160					0.60	2.47	1.5	
200					0.65	2.94		
250					0.75	3.42	1.3	
315					0.86	4.08		
400					1.02	4.84	1.1	
500					1.20	5.79		
630					1.36	6.84	1.0	
800					1.56	8.26		
1000					1.84	9.78	0.85	
1250					2.12	11.50		
1600					2.48	13.80	0.7	
2000					2.88	16.30		
2500					3.44	19.30	8.0	
2000					2.88	17.80		
2500					3.44	21.20		
3150					3.90	23.61		

Technical parameters of SC (B) 11 series 10kV dry type power transformers

Sr kVA	Voltage combination			Vector group	P _o	P _κ	I _o	U _κ
	HV (kV)	Tapping range (%)	LV (kV)		kW	kW(120°C)	%	%
630	6 6.3 6.6 10 10.5 11	±2×2.5 or ±5.0	3 3.15 6 6.6	Dyn11 Yd11 Yyn0	1.32	6.36	1.0	6.0
800					1.44	7.60		
1000					1.72	8.78	0.85	
1250					2.08	10.40		
1600					2.48	12.70	0.7	
2000					3.20	15.20		
2500					3.76	17.80	0.6	
3150					4.48	20.90		
4000					5.36	25.10	0.5	7.0
5000					6.40	29.70		
6300					7.56	35.30		

Technical parameters of SC 11 series 35kV dry type power transformers

Sr kVA	Voltage combination			Vector group	P _o kW	P _k kW(120℃)	I _o %	U _k %
	HV (kV)	Tapping range (%)	LV (kV)					
800	35 36 37 38.5	±2×2.5 or ±5.0	3.15 6 6.6 10 10.5 11	Dyn11 Yd11 Yyn0	2.00	9.40	0.95	6.0
1000					2.37	10.90		
1250					2.78	12.90		
1600					3.28	15.40		
2000					3.76	18.20	0.8	7.0
2500					4.32	21.80		
3150					5.36	24.50	0.7	8.0
4000					6.24	29.40		
5000				7.44	34.90			
6300				8.80	40.80			
8000				10.00	46.00	0.5	9.0	
10000				11.50	55.50			
12500				14.00	64.60			
16000				17.20	76.00	0.4		
20000				20.40	85.50		0.4	10.0

Technical parameters of SC 11 series 35kV dry type distribution transformers

Sr kVA	Voltage combination			Vector group	P _o kW	P _k kW(120℃)	I _o %	U _k %
	HV (kV)	Tapping range (%)	LV (kV)					
50	35 36 37 38.5	±2.5 or ±5.0	0.4	Dyn11 Yyn0	0.40	1.42	2.3	6.0
100					0.56	2.09	2.0	
160					0.70	2.81	1.5	
200					0.78	3.32		
250					0.88	3.80	1.3	
315					1.04	4.51		
400					1.22	5.41	1.1	
500					1.44	6.65		
630					1.65	7.69	1.0	
800					1.92	9.12		
1000					2.16	10.40	0.75	
1250					2.52	12.70		
1600					2.88	15.40		
2000					3.40	18.20		
2500					3.96	21.80		

H CLASS INSULATION SG(B) 10 SERIES DRY TYPE TRANSFORMER WITH NON-ENVELOPED WINDINGS

Product Introduction

Three phases dry type transformer with non-enveloped winding has advantages of safety, reliability, energy saving, fireproof, explosion proof and simple maintenance. It has advanced design, reasonable structure and a beautiful appearance. The main performance indicators are better than national standards such as partial discharge level, no-load loss, load loss, noise level and adaptable to high humidity environments etc. It can be installed in wet environments which are near to lake, sea, river, high fire protection requirements and larger load areas.

Features

- There is no partial discharge, no cracks and reduced insulation level on SG(B)10 series transformers under operation in whole effective life term due to the structures of windings with constant design improvement and vacuum pressure impregnating technology.
- The high-voltage adopts continuous winding and foil structure of low voltage. The whole vacuum pressure

impregnation and curing process use high-strength laminated products to support, owning a better ability to withstand short circuit.

- Non-flame material, flame retardant, non-toxic, self-extinguishing, fireproof
- There is hardly any smoke or fog produced when SG (B) series transformers are burning under high temperature and blazing fire.
- SG(B) series transformers is H Class (180 °C) insulation system and the NOMEX insulation system is C class insulation. The insulation layer is extremely thin and uniform hence the short time overload ability is strong. Without forced cooling, it can be 120% long-term overload, 140% overload for 3 hours.
- SG(B) series transformers is harmless to the environment. It can be disassembled easily when useful life is end. Conductor material and core can be recycled, which is environmentally friendly.



Applications

- Electrical power system
- Transportation: underground, bus station, highway system, airport and port
- Public buildings: hotel, hospital, commercial center, scientific research institutions, high building and gymnasium
- Industrial and mining enterprises
- Offshore oil well drilling platform, ship, oil field

Technical parameters of H class insulation SG(B)11 series dry type transformer with non-enveloped windings

Type	SG10 11KV dry type distribution transformer				
	Capacity	P _o	P _k	I _o	U _k
	kVA	kW	kW(145°C)	%	%
SG11-100/10	100	0.36	1.69	1.50	4.0
SG11-160/10	160	0.48	2.28	1.30	
SG11-200/10	200	0.55	2.71	1.10	
SG11-250/10	250	0.64	2.96		
SG11-315/10	315	0.79	3.73	1.00	
SG11-400/10	400	0.88	4.28		
SG11-500/10	500	1.04	5.23		
SG11-630/10	630	1.20	6.29	0.85	6.0
SG11-630/10	630	1.17	6.40		
SG11-800/10	800	1.36	7.46		
SG11-1000/10	1000	1.59	8.76		
SG11-1250/10	1250	1.88	10.30		
SG11-1600/10	1600	2.20	12.50		
SG11-2000/10	2000	2.74	15.50	0.70	
SG11-2500/10	2500	3.24	18.40		

DRY TYPE TRANSFORMER FOR OFFSHORE PLATFORM

Dry type transformers for offshore platform not only has all the advantages of SC11 resin insulation dry-type transformers, but also has "three" features of anti-salt, anti-fungal, anti-moisture which is the best choice for offshore drilling platforms and marine electrical equipment



Technical parameters of SC11 series 10kV class and 0.3kV class dry type distribution transformer for offshore platform

Sr kVA	Voltage combination			Vector group	P _o	P _k	I _o	U _k	Winding insulation Heat resistance class
	HV (kV)	Tapping range (%)	LV (kV)		kW	kW(100°C)	%	%	
30	3 6 10	±2×2.5 or ±5.0	0.4	Dyn11 Yyno Dd0	0.17	0.67	1.7	4.0	F class
50					0.24	0.94			
80					0.33	1.29			
100					0.36	1.48	1.6		
125					0.42	1.74			
160					0.48	2.00	1.4		
200					0.55	2.37			
250					0.64	2.59			
315					0.79	3.27	1.2		
400					0.88	3.75			
500					1.04	4.59	1.1		
630					1.20	5.53			
630					1.17	5.61			
800					1.36	6.55	1.0		
1000					1.59	7.65			
1250					1.88	9.10			
1600					2.20	11.00	0.9		
2000					2.74	13.60			
2500	3.24	16.10							
100	0.38 (0.44)	±2.5 or ±5.0	0.115 0.230 0.400 (0.45)	yyn11 yyno Dd0	0.40	1.70	1.6	4.0	
125					0.47	1.99			
160					0.54	2.30	1.4		
200					0.62	2.66			
250					0.72	3.23	1.2		
315					0.88	3.90			
400					0.98	4.72			
500					1.16	5.80	1.1		

Technical parameters of SC11 series 35kV class dry type power transformer for offshore platform

Sr kVA	Voltage combination			Vector group	P _o kW	P _k kW(100℃)	I _o %	U _k %
	HV (kV)	Tapping range (%)	LV (kV)					
800	35 36 37 38.5	±2×2.5 or±5.0	3.15 6 6.6 10 10.5 11	Dyn11 Yd11 Yyno	2.00	8.87	0.95	6.0
1000					2.37	10.30		
1250					2.78	12.10		
1600					3.28	14.60		
2000					3.76	17.20		
2500					4.32	20.60		
3150					5.36	23.10	0.85	
4000					6.24	27.70		
5000					7.44	32.90	0.8	
6300					8.80	38.50		
8000			10.00	43.40	0.7			
10000			11.50	52.40				
12500			14.00	60.90	0.6			
16000			17.20	71.70				
20000			20.40	80.60	0.4	8.0		
					6 10	Dyn11 Yd11 YNd11			0.5	9.0
							0.4	10.0

THREE-DIMENSIONAL ROLL CORE DRY TYPE TRANSFORMER

Performance characteristics

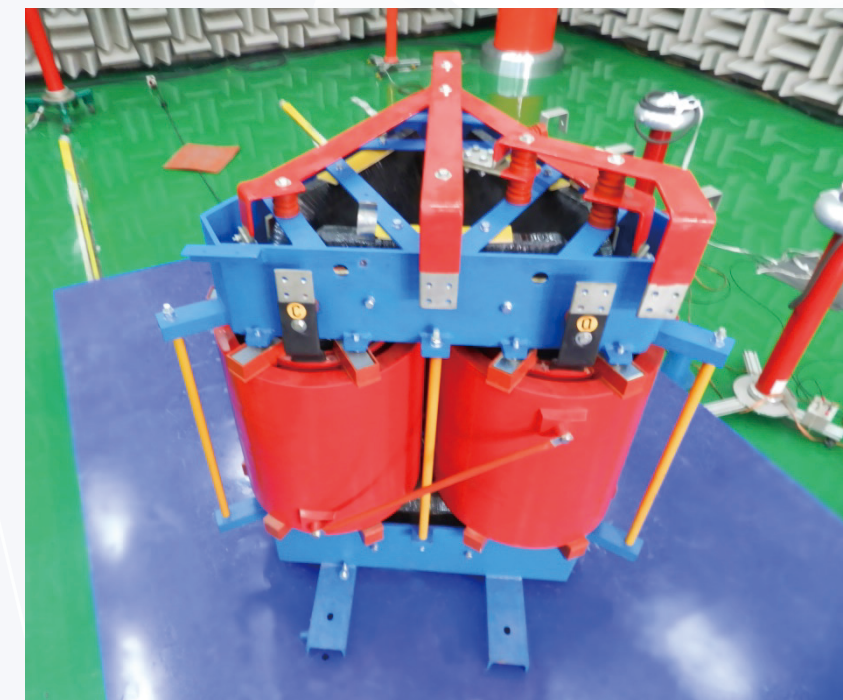
- Low voltage balance outlet method to ensure the balance of low voltage outlet of open triangular three-dimensional wound roll core transformer.
- Three-phase high-voltage wiring built-in technology patents to reduce the transformer installation area of 60%.
- Triangle structure reduces load loss, the overall transmission efficiency of transformer can reach more than 99.8%.

Application

High-rise buildings, shopping malls, airports, subways, railway stations, wharfs, petroleum, chemical, nuclear power plants, offshore platform, residential areas, light railways, electricians and other new places need fire prevention, explosion proof places, wind power generation and solar energy.

Performance characteristics

- The company developed the open triangular three-dimensional wound core transformer traditional stacked core transformer, split single-slit and closed-wound three-dimensional wound core transformer fusion to solve the problem of mass production process.
- The product has the advantages of simple process, low loss, low noise, low cost, strong anti-short circuit capability, strong magnetic capability, convenient repair and maintenance.
- In line with the state on energy saving and environmental protection of the general idea and also in line with the core material development trend.



COMBINED TRANSFORMER

Design of anti short circuit

ZGSII series combined transformer is a new type of distribution equipment (commonly known as American box substation). The high voltage load switch, the inserted fuse and the high voltage current limiting fuse are installed in the transformer oil tank, and the mineral oil is used for insulation and cooling. The utility model has the advantages of reasonable and compact structure, small size, flexible installation, convenient operation, small occupied area, etc.. The combined transformer is especially suitable for the load center of urban power grid, reducing the loss and improving the quality of power supply. City Power Grid in developed countries has been widely used in combined transformer, China is also for the urban and rural power grids, ZGS series combination transformer is in accordance with the national standard GB/T 10217 《Combination transformer design》, which is undoubtedly the best city distribution equipment in power grids.

- Full sealed oil tank and full insulation design, safe and reliable operation
- Heavy overload capacity and excellent feature for anti-sudden short-circuit ability
- In service both in loop feed and terminal feed, and power supply reliability is improved
- Energy-saving and low loss. the loss is not more than value of new S11.
- Excellent Impact-resistant ability.
- The cable terminals, which can switch on and switch off the circuit on-load with current up to 200A, have long mechanical and electrical life.



Features of product

- Small dimension, reasonable and compact structure

Transformer Parameters

Sr kVA	Voltage combination			Connection Symbol	No-load loss (W)	Load loss (W)	No-load Current (%)	Short-circuit impedance (%)
	HV (kV)	Tapping range(%)	LV (kV)					
100	10 10.5 11	±2×2..5 or ±5.0	0.4	Dyn11	200	1500	1.1	4.0
160					290	2200	1.0	
200					330	2600	0.9	
250					400	3050	0.8	
315					480	3650	0.6	
400					570	4300	0.6	
500					680	5150	0.6	
630					810	6200	0.6	
800					980	7500	0.6	
1000					1150	10300	0.6	

PHOTOVOLTAIC (PV) AMERICAN BOX SUBSTATION

Photovoltaic power generation, a kind of clean energy production method, get rapid development both at home and abroad. ZGS series of - Z.T combined transformer meet the increasing needs of photovoltaic power generation. My company production of 10 KV, 35 KV combined transformer, on the basis of digesting and absorbing advanced technology both at home and abroad combined with the domestic demand of self-developed series of products, this product is to the transformer, load switch, high-voltage fuse installed in the casing of transformer. The use of transformer insulation liquid is for insulation and cooling medium. The product adopts a full sealed structure, the shell adopts fission, shot peening, pickling, phosphating and spray primer, intermediate coat, paint surface of the process to achieve the required corrosion, thick resistance, prevent ultraviolet than ordinary linear spraying intensity. The product has the advantages of small volume, light weight and convenient installation.

Design of anti short circuit

- Fully sealed fuel tank, no oil storage tank, free of suspension core
- The cases are treated with special process and have good anti-corrosion ability
- The 10KV class combination is changed by high voltage backup current protection fuse and the insertion overload protection fuse in series, which provides full range protection for the transformer
- The 35KV class combination adopts a new full-range protection with high pressure limit flow fuse with high breaking capacity



A systematic selection of a pad-mounted transformer

Sr kVA	High voltage switch	High voltage arrester	Low voltage cir- cuit breaker	Low voltage arrester	Auxiliary transformer
400	35kV with :	35kV with :	HNW2-3200/3P	0.69kV with :	0.69kV with :
630	BYFI-40.5/630-20	HY-	In=2000A	MYG-690/5 or	SG-3/0.69/0.4
900	10kV with :	5WZ-51/134 or	KFW2-1600/3P	ZYM-	or
1600	FYB-10/630-	TBP-B-42/800	In=1000A	FD/690/3P	SG-80/0.69/0.4
2350	20-F2	10kV with :	3WL-	0.4kV with :	0.315kV with :
3350	.....	HY5WZ-17/45	1600N/1000A 4P	ZYMS-400/3P	SG-
		.....	.....	or	10/0.315/0.4
				HY1.5W-0.5/2.6	.....
				



CUBICAL SUBSTATION SERIES (EUROPEAN BOX SUBSTATION)

The products comply with GB17467 (HV&LV preinstalling transformer substation) and IEC1330 Etc.

YB transformer substation named European style cubical substation. This is a new type of electricity supplying equipment, with more advantages than the traditional substation.

Due to its small size, small footprint, compact structure and easy relocation, it greatly reduces the construction cycle, floor area, and also reduces the cost of infrastructure. At the same time,

the simple box-type substation site installation, power supply quickly, equipment maintenance is simple, do not need to be specialist unattended, and it can be put into load centers, to improve the quality of power supply, reduce power loss, enhance the reliability of power supply and it is very important for the modification of the distribution network.

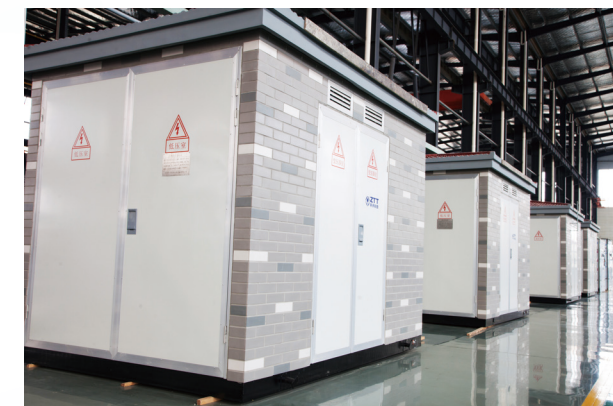


Functions and features

- It is composed of high voltage switchgear, transformer and low-voltage switch equipment, which has strong performance
- The high and low voltage protection is perfect, the operation is safe and reliable and the maintenance is simple
- Less land occupation, less investment, short production cycle and mobile.
- The wiring scheme is flexible and diverse
- Unique honeycomb structure, double layer (composite board) shell solid, heat insulation and heat dissipation, ventilation, beautiful, high level of protection, customer can choose stainless steel, titanium alloy, aluminum alloy, cold rolled plate and an optional color steel plate as shell.
- Various types: general type, villa type, compact type and so on
- The assembly line automation terminal (FPU) can reliably detect the short circuit and single phase grounding fault in the high voltage loop network cabinet, and has the function of "four remote", which is convenient for upgrading the distribution network automation

Application places

It is widely used in urban power grid reconstruction, residential areas, high-rise buildings, working conditions, hotels, shopping malls, airports, railways, oil fields, docks, highways, temporary electricity facilities and other places inside and outside.



A systematic selection of European box substation

Sr kVA	HV switch	HV arrester	LV circuit breaker	LV arrester	Auxiliary transformer
400	35kV with :	35kV with :	HNW2-	0.69kV with :	0.69kV with :
630	FTK-40.5/63-20 or	HY-	3200/3P In-	MYG-690/5	SG-3/0.69/0.4
900	ZN12-40.5/1600-	5WZ-51/134	=2000A	or	or
1600	25	or	KFW2-1600/3P	ZYM-FD/690/3P	SG-80/0.69/0.4
2350	10kV with :	TBP-B-42/800	In=1000A	0.4kV with :	0.315kV with :
3350	FZRN25-12/T125-	10kV with :	3WL1600N/	ZYMS-400/3P	SG-10/0.315/0.4
	31.5	HY5WZ-17/45	1000A 4P	or	.....
	.....	.....	.....	HY1.5W-0.5/2.6	
				



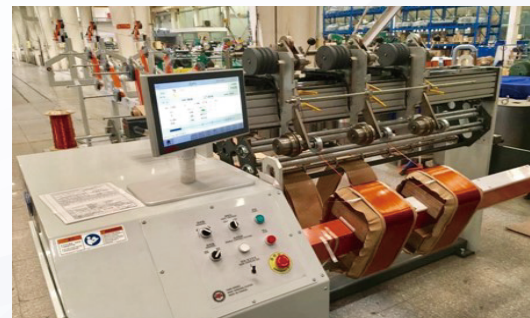
PRODUCTION EQUIPMENT

MAIN MANUFACTURE EQUIPMENT

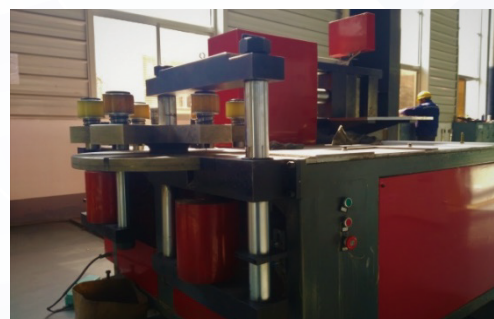
Stable product quality cannot be separated from advanced production equipment, the selection of equipment follows the principle of "import of key equipment, domestic of Priority equipment ", we have vacuum pouring lines made by HEDRICH in Germany, three head coiling machines made by MTM in Canada, cutting lines, domestic advanced foil winding machines and other production equipment.



Vacuum casting (HEDRICH , Germany)



Coil winding (DWM , Canada)



Busbar process machine



Copper foil winding



Curing oven



Drying machine



Oil filling machine



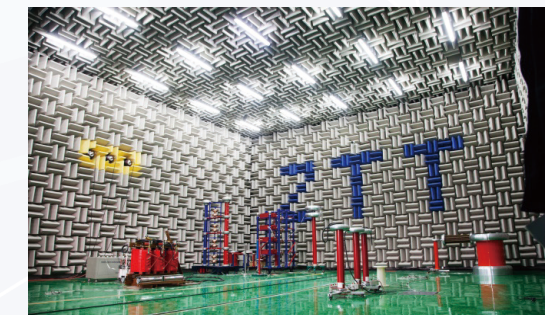
Core sheering machine

TEST FACILITIES

Stable product quality is inseparable from the advanced inspection methods, we own the biggest transformer noise test hall in the whole industry with the same voltage level, automatic testing pipeline comparable with foreign counterparts, Lightning impact generator, induction voltage regulator, transformer oil comprehensive laboratory and other testing equipment.



NKT automatic testing line



Noise testing hall



Voltage regulator



Impulse voltage generator



Power analyzer



Multi-channel partial discharge



Voltage ratio measurement



Insulation resistance



Power frequency withstand

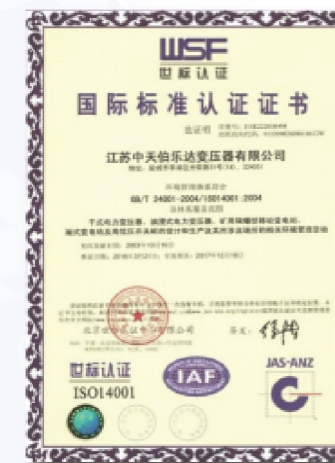


Dielectric loss



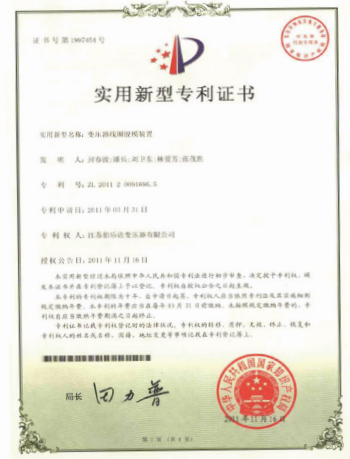
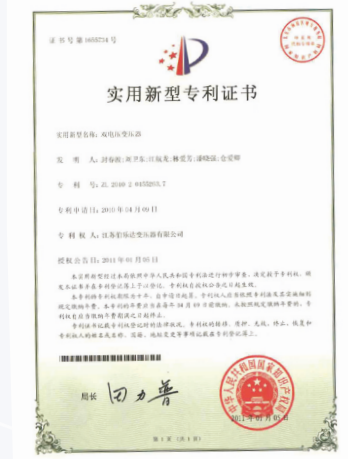
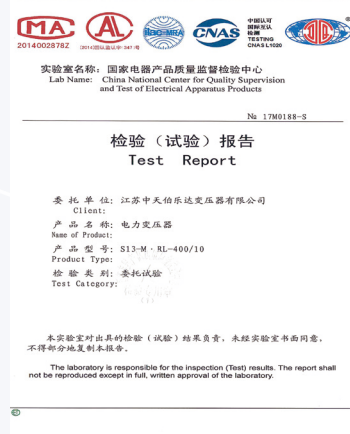
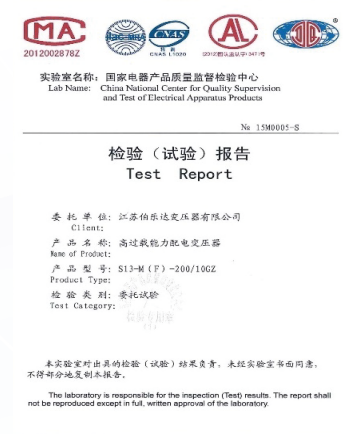
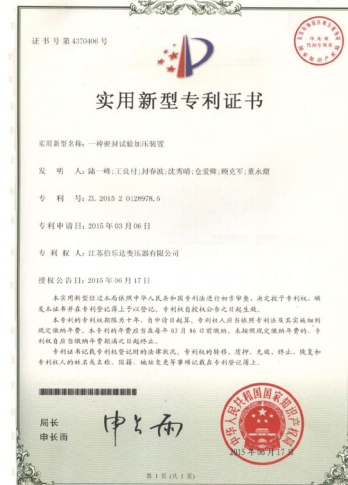
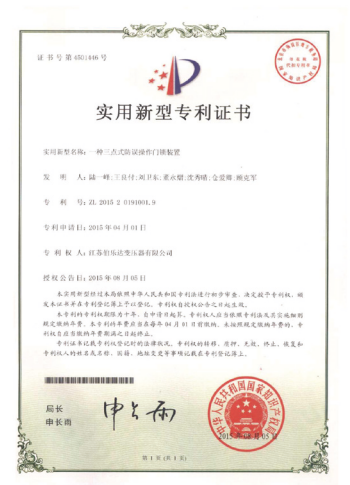
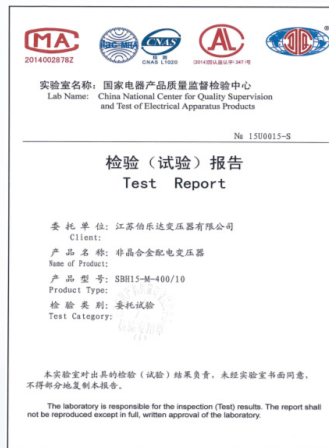
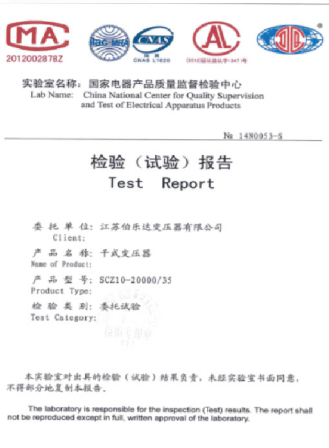
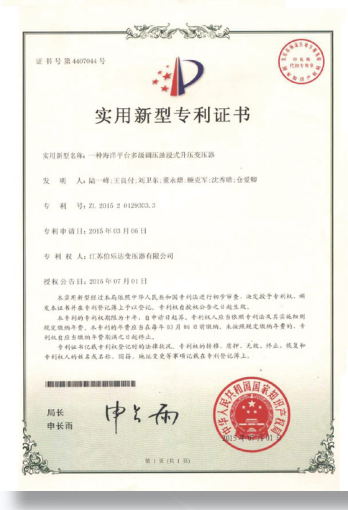
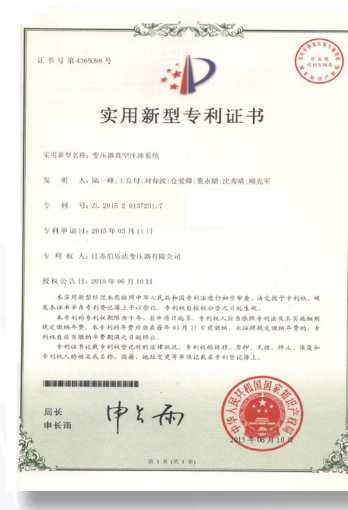
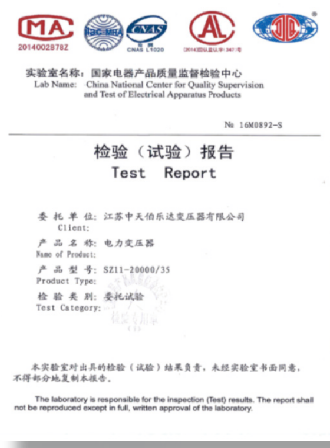
QUALITY SYSTEM

The company has passed the certification of quality, environment, occupational health and safety system and a series of type/short circuit tests carried out by third-party authoritative laboratories at home and abroad, and obtained the certificate.



TEST REPORTS

PATENT CERTIFICATE



USERS OF US



STRENGTH OF US

- To participate in the 2017 national work conference on transformer industry standardization and the type power transformer product quality evaluation standards
- To participate in the mechanical industry standard of natural ester insulation oil distribution transformer
- To participate in GB/T 22578.1, the heat of the electrical insulation system (EIS) liquid and solids and the first part of the general demand, and GB/T 22578.2 "electrical insulation system (EIS)" liquid and solid parts of the thermal evaluation section 2: simplified test "standard
- In the standard drafting of oil-immersed power transformer test guide
- To participate in the standard revision of technical parameters and requirements of dry amorphous alloy iron core distribution

transformer

- To participate in the seminar on intelligent manufacturing innovation model of transformer industry
- To participate in the theme of "technological innovation to drive higher quality products" 2017 China BBS transformer technology development and at the meeting made a "aluminum zirconium alloy distribution transformer" technical report
- Aluminum zirconium alloy, high overload capacity transformer winding transformer, amorphous alloy iron core transformer anti-short circuit ability in March 2017 by the China electricity council expert appraisal, three types of energy-saving products by the expert group identified as international advanced level.

(The picture below is part of the conference picture)



FOCUS ON *PRECISE MANUFACTURING*

