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**CHENGLAI**

**EMPOWERING THE  
FUTURE WITH TECHNOLOGY**



**CHENGLAI**





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## About Chenglai

Chenglai Electric Technology Co., Ltd., established in 1970, is located in the Economic Development Zone of Zhenlai County, Jilin Province, China. Throughout the past five decades, the company has remained committed to the spirit of ingenuity, dedicating itself to the relentless pursuit of exceptional quality and harnessing science and technology to pave the path towards the future. Through continuous exploration and the pursuit of innovation, Chenglai has endeavored to surpass existing limitations. Encompassing an extensive area of 250,000 square meters, the company comprises eight subsidiaries and four functional management centers and boasts an annual production capacity of 50,000 MVA. Its product range covers 12 major categories and over 1100 varieties of 300 kV and below power transformers, box-type substation, and high and low voltage packaged equipment. It has emerged as a crucial cornerstone within

the Chinese high-voltage transmission equipment and renewable energy industry sectors, earning noteworthy distinctions such as the state-level technologically advanced 'little giant' enterprises, the third prize for the National Energy Technology Progress award, and recognition as a high-tech enterprise by Jilin Province.

Leveraging its inherent geographical advantages, Chenglai has fostered a mutually beneficial alliance between the northern and southern regions, bolstering its international business endeavors. The company's multifaceted business portfolio encompasses comprehensive electrical equipment, extensive research and development in composite materials for the advancement of renewable energy, power engineering installation, power operation market services, Engineering Procurement and Construction, and overseas market development.

# Milestones

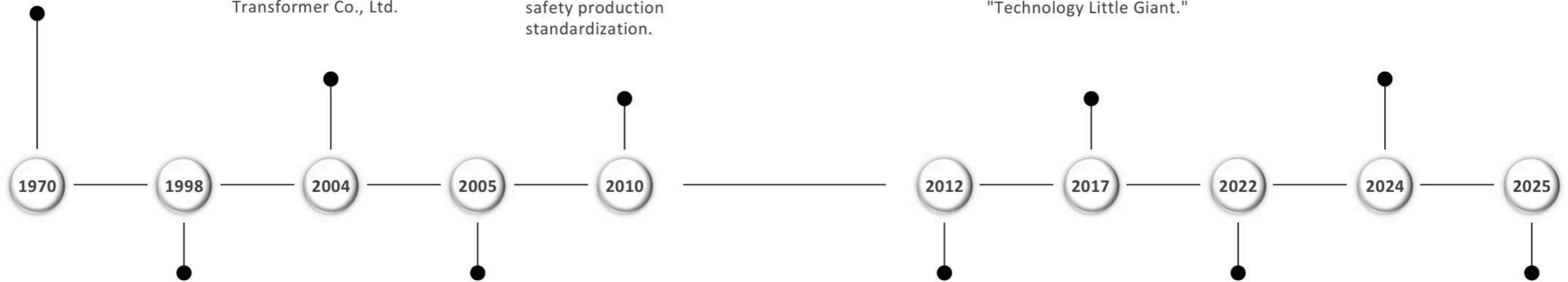
Established the Jilin Province Zhenlai Transformer Factory.

Formed a joint venture with Baicheng Power Supply Company to create Baicheng Electric Power Zhenlai Transformer Co., Ltd.

Laid the foundation for a 250,000 m<sup>2</sup> new factory in Zhenlai County Industrial Park; achieved Level 2 national safety production standardization.

Restructured assets to form Chenglai Electric Technology Co., Ltd.; recognized as a high-tech enterprise and a "Technology Little Giant."

Jilin Province Digital Demonstration Workshop; Jilin Province Single-Category Champion Enterprise.



Underwent state-owned enterprise reform; products featured in the first national directory of key grid equipment.

The self-developed wind power boost substation earned a National Energy Science and Technology Progress Award (Third Prize).

Established a provincial R&D center; received the Jilin Province Quality Award and recognition as an AAAA-level standardization enterprise.

Designated a national "Specialized, Refined, Distinctive, Innovative" Little Giant; the Electrical Testing Center acquired CNAS accreditation.

Passed the re-evaluation as a national "Specialized, Refined, Distinctive, Innovative" Little Giant; the 'Chenglai' trademark was included in the Jilin Province Key Trademark Protection List.



## The Power of Manufacturing



## Green Factory

The company has independently built a 1.6 MW rooftop photovoltaic project that provides 4.04 million kWh of clean power annually, saving 1,504 tons of standard coal and reducing emissions by 4,016 tons of carbon dioxide and 1,493 tons of harmful substances. With a 100% green power usage rate, this initiative has enabled our product exports to obtain carbon tax compliance certificates, supported our energy transition, and facilitated the full implementation of carbon footprint and carbon audit management—paving the way toward achieving a ‘zero-carbon factory’ target. This undertaking is not only an important milestone on our journey toward green, low-carbon development but also a solemn commitment to the future, the planet, and humanity. We will continue to lead the industry’s green development with concrete actions, contributing our expertise and efforts to the great mission of achieving carbon peaking and carbon neutrality.



## Research & Innovation

Chenglai upholds the corporate vision of “Becoming a Green Power Ambassador, Creating a Century-Old Chenglai” and is dedicated to the innovative development of power transmission and transformation, new energy, new materials, and strategic emerging industries. We follow a developmental path of intelligence, diversification, and capitalization. Leveraging the technical support provided by our Provincial Technical R&D Center, the Zhu Yinghao Jilin Provincial Academician Workstation, and the Chenglai Electric–Shenyang Transformer Research Institute Joint R&D Center—and backed by the China National Accreditation Service (CNAS) certified Electrical Testing Center—we continuously carry out independent R&D and testing of power transmission and transformation equipment to drive technological innovation and industrial upgrading.

To date, Chenglai has secured 72 patents, including 15 invention patents. Our products’ technical specifications and energy efficiency ratings exceed national standards, and they are widely applied across various sectors, positioning our technology at the forefront of the industry.



# Quality Assurance



# Test Reports

型式试验报告  
Type Test Report

委托单位: Chenglai Electric Technology Co., Ltd.  
产品名称: Power transformer  
产品型号: SS220-240000/220  
试验类型: Type test

型式试验报告  
Type Test Report

委托单位: 成来电气科技有限公司  
产品名称: 华式箱变式变电站  
产品型号: YBH-40.5/1.14-12000  
试验类型: 型式试验

# Patents

China National Accreditation Service for Conformity Assessment  
LABORATORY ACCREDITATION CERTIFICATE  
Electrical Test Center of Chenglai Electric Technology Co., Ltd.

## Featured Projects



## Wind Power

### China General Nuclear Power Group Xing'an League 3,000 MW Wind Power Project

Largest operational onshore wind farm in China



The 220 kV, 250 MVA main transformers are supplied for the project. Designed to eliminate on-site core lifting inspection, the transformers offer high reliability, low losses, low temperature rise, and low partial discharge levels — ensuring long-term stable operation of the project.



The 35 kV, 4,500 kVA box-type transformers are provided for the project. Equipped with intelligent monitoring, fire protection, and environmental monitoring systems, the transformers fully support real-time monitoring of switch operating status, remote operational control, and seamless management via app and cloud-based maintenance centers.

## Wind-Solar Power

### China Datang Corporation Mengxi Tuoketuo 2,000 MW Wind-Solar Project



The project is powered by 220 kV, 250 MVA main transformers. With no need for on-site core lifting inspection, these transformers combine high reliability, low losses, low temperature rise, and low partial discharge levels to guarantee sustained and stable project operation.

## Wind, Solar, and Thermal Power

### State Power Investment Corporation Jixi Base Lugu DC Baicheng 1,400 MW Outbound Project



The 220 kV, 220 MVA and 150 MVA main transformers delivered for the project are engineered to require no on-site core lifting inspection. Featuring high reliability, minimal losses, low temperature rise, and exceptionally low partial discharge levels, the transformers provide a solid foundation for the long-term stable operation of the project.

## Solar Power

### China General Nuclear Power Group Hotan Luopu 1,000 MW Photovoltaic Storage Project



Serving the project are 220 kV, 240 MVA main transformers that eliminate the need for on-site core lifting inspection. Their outstanding performance — characterized by high reliability, low losses, low temperature rise, and low partial discharge levels — ensures dependable, long-term operation of the project.

## Wind Power

### China Datang Corporation Alxa League Wuliji 400 MW Wind Power Project



The project is equipped with 220 kV, 260 MVA main transformers, representing the largest single-unit capacity at the 220 kV voltage level. Designed to eliminate the need for on-site core lifting inspection, these transformers deliver high reliability, low losses, low temperature rise, and low partial discharge levels — ensuring long-term stable and dependable operation of the project.

## Key Customers



## Services & Support

Chenglai adheres to the “Customer First, Quality First” philosophy and has crafted a robust after-sales service system for overseas markets. We continuously improve quality management to ensure stable equipment operation, meeting international customers’ demands and elevating satisfaction. Guided by the belief that “if the customer is not satisfied, the service will never stop,” we deliver exceptional products and services worldwide.

To serve the international market, we have built a global technical service network with dedicated overseas centers, experienced professional teams, and a 24-hour international hotline. When feedback is received, we respond swiftly, tailoring our approach to each region’s unique conditions to rapidly resolve faults and restore power. We also offer round-the-clock remote support via phone and online services, ensuring comprehensive technical assistance for overseas clients.

Chenglai is committed to its mission of “providing excellent equipment for the entire energy industry and enabling stakeholders to share balanced value.” Focusing on enterprise collaboration and market-driven operations, we are building an international industrial platform. Through joint-stock cooperation and industrial alliances, we transform regional resources into tangible outcomes, accelerating product expansion and global breakthroughs in the new energy market. With ongoing innovation and superior service, Chenglai is set to expand globally and partner with clients to shape a brilliant future.

## Featured Products

### I. Oil-immersed Transformer

#### 220kV Power Transformer

Drawing on decades of experience and incorporating advanced technologies from both home and abroad, our 220 kV power transformers have evolved into a mature, standardized product platform. The product range has progressed from the early Type 9 to the current Type 18, Type 20, and Type 22 series, reflecting continuous technological advancement. We also offer self-cooled and forced-air-cooled configurations with maintenance-free designs.

Our 220 kV transformers are widely recognized and trusted by customers for their outstanding performance, featuring elimination of on-site core lifting inspection, high reliability, low losses, low noise, low temperature rise, and low partial discharge levels.

This series fully meets the demands for high power supply quality, low losses, low noise, and extended maintenance-free intervals.



### Technical parameters

Technical parameters of 220kV 31500-300000kVA three-phase three-winding on-load voltage regulation transformer

Rated capacity (kVA)	Voltage combination and branching range			Con-nection group	S <sub>22</sub>			Impedance voltage (%)		
	High voltage (kV)	Medium voltage (kV)	Low voltage (kV)		No-load loss (kW)	Load loss (kW)	No-load current (%)			
31500	220±8×1.25%	69	6.3	YNd11	19	138	0.2	High-Medium 12-14		
40000			6.6		23	165				
50000			10.5		26	194				
63000			11		31	231				
90000			35		40	300				
120000			37		51	369				
150000		121	10.5		59	438		7-9		
180000					38.5	68			538	
240000					11	85			667	
250000					35	88			688	
260000					37	90			708	
280000					38.5	95			749	
300000									100	789

## 110kV Power Transformer

Incorporating advanced domestic and international technologies, our 110 kV power transformers utilize computer-aided analysis to precisely simulate electric field distribution and voltage gradients, ensuring an optimized structure with uniform field distribution, minimized mechanical stress, and low partial discharge levels.

The S18, S20, and S22 series feature a flat, square bell-jar oil tank design. High-strength insulating spacers and reinforced bracing are strategically integrated within the windings to enhance mechanical strength. Materials with high strength and low dielectric loss are carefully selected, with sufficient clamping force and fasteners to ensure structural integrity. Specialized end insulation techniques and materials significantly enhance short-circuit withstand capability.

A dedicated positioning mechanism between the core-winding assembly and the oil tank prevents relative displacement, enabling the transformer to withstand up to 3g impact during transportation. This series fully meets the demands for high power supply quality, low losses, low noise, and extended maintenance-free intervals.



## Technical parameters

Technical parameters of 110kV 6300-63000kVA three-winding on-load voltage regulation transformer

Rated capacity (kVA)	Voltage combination and branching range			Connection group	No-load loss (kW)	Load loss (kW)	No-load current (%)	Impedance voltage (%)
	High voltage(kV)	Medium voltage (kV)	Low voltage (kV)					
6300	110±8×1.25%	35 37 38.5	6.3 6.6 10.5 11	YNyn0d11	5.3	40	0.2	High-medium 10.5  High-low 17.5-18.5  Medium-low 6.5
8000					6.3	48		
10000					7.5	56		
12500					8.9	67		
16000					10.6	81		
20000					12.5	95		
25000					14.9	113		
31500					17.7	134		
40000					21.2	161		
50000					25.0	192		
63000					29.8	230		

## 66kV Power Transformer

The 66 kV power transformers represent the culmination of years of technological refinement, drawing on advanced expertise from both home and abroad. With product reliability at the core of our design philosophy, every aspect — from structural optimization to manufacturing processes — undergoes rigorous R&D and strict quality control, earning the trust and recognition of a broad customer base.

Available in the S18, S20, and S22 series, these transformers deliver outstanding performance with low losses, low noise, low partial discharge, high mechanical strength, and high dielectric strength. The fully sealed construction eliminates the need for on-site core lifting inspection, ensuring ease of installation and reduced maintenance requirements. Together, these features contribute to lower operational costs, improved economic efficiency, and enhanced safety for the power grid.



## Technical parameters

Technical parameters of 66kV 2000-100000kVA duplex winding on-load voltage regulation transformer

Rated capacity (kVA)	High voltage (kV)	Branching range	Low voltage (kV)	Con-nection group	No-load loss (kW)	Load loss (kW)	No-load current (%)	Impedance voltage (%)
2000	60 63 66	±8×1.25%	6.3 6.6 10.5 11	YNd11	1.8	14.7	0.3	8.0
2500					2.1	17.4	0.3	
3150					2.4	20.7	0.3	
4000					3.1	24.6	0.3	
5000					3.7	27.6	0.3	
6300					4.4	30.8	0.3	9.0
8000					5.3	36.5	0.3	
10000					6.2	43.0	0.3	
12500					7.4	51.1	0.3	
16000					8.9	62.8	0.3	
20000					10.6	76.1	0.3	
25000					12.5	90.0	0.3	
31500					14.8	108.0	0.3	
40000					17.7	126.9	0.3	
50000					20.9	150.3	0.3	
63000					24.7	178.2	0.3	
75000					28.2	203.1	0.3	
90000					32.3	232.9	0.3	
100000					34.9	252.0	0.3	

## 35kV Power Transformer

Developed with a firm commitment to reliability, our 35 kV power transformers incorporate advanced technologies from both domestic and international sources. Through continuous R&D, progressive structural optimization, and stringent quality control throughout the manufacturing process, our products have earned widespread trust and acclaim from customers.

A key highlight of this series is the redesigned winding duct structure, which effectively lowers hot-spot temperatures within the windings. Complementing this, the optimized oil tank design maximizes heat dissipation area, preventing oil degradation even under severe overload conditions. Under such conditions, the winding insulation remains resistant to thermal aging and thermal runaway, preserving the transformer's excellent electrical and mechanical performance over its entire service life.



## Technical parameters

Technical parameters of 35kV 2000kVA~31500kVA three-phase duplex winding on-load voltage regulation transformer

Rated capacity (kVA)	Voltage combination and branching range			Con-connection group	No-load loss (kW)	Load loss (kW)	No-load current (%)	Impedance voltage (%)
	High voltage (kV)	High voltage branching range (%)	Low voltage (kV)					
2000	35	±3×2.5	6.3	Yd11	1.3	15.8	0.80	6.5
2500			10.5		1.5	18.7	0.80	
3150	35-38.5	±3×2.5	6.3 10.5		1.8	22.2	0.72	7.0
4000					2.1	26.2	0.72	
5000					2.6	30.8	0.68	
6300					3.1	33.0	0.68	
8000	35-38.5	±5 ±3×2.5	6.3 6.6 10.5 11	YNd11	4.3	36.5	0.60	7.5
10000					5.1	43.2	0.60	
12500					6.0	51.1	0.56	8.0
16000					7.2	63.3	0.54	
20000					8.5	74.4	0.54	
25000					10.1	88.0	0.48	
31500	12.0	104.4	0.42					

## 10kV Oil-immersed Distribution Transformer

### Product profile

- The iron core is manufactured using cold-rolled grain-oriented silicon steel sheets with a thickness of 0.30 mm or 0.27 mm, ensuring low no-load losses across the entire series. The S20 and S22 models represent an advanced generation of distribution transformers, offering further reduced losses for superior energy efficiency.
- The winding process employs specialized winding machines with synchronized coiling of both high-voltage and low-voltage windings, ensuring consistent quality and structural precision.
- All oil tanks in this distribution transformer series adopt a fully sealed corrugated-wall construction, eliminating the need for a conservator and reducing maintenance requirements.

### Usage environment

- Altitude: not exceeding 1,000 meters above sea level.
- Maximum ambient temperature: +40°C; maximum daily average temperature: +30°C.
- Maximum annual average temperature: +20°C; minimum ambient temperature: -25°C.
- Relative humidity: daily average not exceeding 95%; monthly average not exceeding 90%.
- Seismic intensity: not exceeding 8 degrees



### Technical parameters

Technical parameters of 10kV S22 three-phase oil-immersed distribution transformer

Rated capacity (kVA)	Rated voltage (kV)		Connection group	No-load current (%)	Loss ( W )		Impedance voltage (%)
	High voltage (kV)	Low voltage (kV)			S22		
					No load	Load	Load
10	6.0±5% or 6.3±5% or 10±5%	0.4	Yyn0/ Dyn11	3.8	29	200	4
20				3	48	336	
30				2.1	65	455	
50				2	80	655	
63				1.9	90	785	
80				1.8	105	945	
100				1.7	120	1140	
125				1.6	135	1360	
160				1.5	160	1665	
200				1.4	190	1970	
250				1.3	230	2300	
315				1.2	270	2760	
400				1	335	3250	5.5
500				1	385	3900	
630				0.9	460	4460	
800				0.8	560	5400	
1000	0.7	665	7415				
1250	0.6	780	8640				
1600	0.6	940	10440				
2000	0.6	1085	13180				
2500	0.5	1280	13360				

## II. Dry-type Transformer

### 10kV Resin Insulation Dry-type Transformer

#### Product profile

- Safe and flame-retardant with excellent fire resistance, allowing direct installation at the load center without the need for a dedicated transformer room.
- Maintenance-free design with easy installation and low operational costs.
- Excellent moisture resistance, capable of normal operation under 100% relative humidity conditions.
- Low losses, low noise, and low partial discharge levels, with total losses typically 5–10% below the corresponding national standards.
- Superior heat dissipation and strong overload capability, able to sustain 150% overload under forced-air cooling conditions.
- Reliable operation with a comprehensive temperature monitoring and protection system, ensuring safe and secure transformer performance.
- Compact size, lightweight construction, robust structure, and strong short-circuit withstand capability.

#### Usage environment

- Altitude: not exceeding 1,000 meters above sea level.
- Ambient temperature: maximum +40°C; minimum -25°C.
- Relative humidity: daily average not exceeding 95%; monthly average not exceeding 90%.
- Seismic intensity: not exceeding 8 degrees (Chinese seismic intensity scale).
- The installation site shall be free from fire hazards, explosion risks, severe pollution, chemical corrosion, and excessive vibration.



#### Technical parameters

Technical parameter of the resin insulation dry type transformer

Rated capacity (kVA)	Rated voltage (kV)	Low voltage (kV)	Connection group	No-load current (%)	Loss ( W )			Impedance voltage (%)	
					No load	Load B(100°C)	Load F(120°C)	Load H(145°C)	Load
30	10	0.4	Yyn0/Dyn11	2.4	105	605	640	685	
50				2	155	845	900	965	
63				1.6	184	1005	1070	1148	
80				1.6	210	1160	1240	1330	
100				1.2	270	1330	1415	1520	
125				1.2	270	1565	1665	1780	
160				1.2	310	1800	1915	2050	
200				10.5	1.2	360	2135	2275	2440
250				11	1	415	2330	2485	2665
315				6	1	510	2945	3125	3355
400	6.3	1	570	3375	3590	3850			
500	6.6	0.8	670	4130	4390	4705			
630	3.15	0.8	755	4975	5290	5660			
800		0.8	875	5895	6265	6715			
1000		0.6	1020	6885	7315	7885			
1250		0.6	1205	8190	8720	9335			
1600		0.6	1415	9945	10555	11320			
2000	0.4	1760	12240	13005	14005				
2500	0.4	2080	14535	15445	16605				

## III. Substation Series

### ZGS22 (G) F Combined Step-up Substation

The ZGS22(G)F combined step-up substation is purpose-built for a wide range of wind power generation units. It steps up the generator output voltage from 620 V–1,140 V to 10–35 kV for grid-connected power delivery, and is extensively applied in new energy power distribution networks.

The oil tank features a fully sealed construction and is equipped with comprehensive protective devices including oil temperature indicators, oil level gauges, pressure gauges, pressure relief valves, and oil drain valves, collectively ensuring the safe and reliable operation of the transformer.

Both incoming and outgoing cable connections adopt an underground insulated bushing design, facilitating convenient installation and ease of maintenance.



### Technical parameters

Technical Parameters of ZGS22(G)F Combined Step-up Substation

Item	Rated capacity (kVA)	Voltage combination and branching range			Con-nection group	No-load loss (W)	Load loss (W)	No-load current (%)	Impedance voltage (%)
		High voltage (kV)	High voltage branching scope (%)	Low voltage (kV)					
Technical Parameters of ZGS22-G(F) -10kV Step-up Transformer	800	10	±2×2.5 ±5%	0.69 0.62	Dyn11	700	7500	0.80	4.5
	900					765	8190	0.75	
	1000					830	10300	0.70	
	1250					970	12000	0.65	
	1600					1170	14500	0.60	
	1800					1257	13780	0.60	
	2200					1461	16020	0.60	
	2400					1560	17100	0.50	
	2700					1700	18680	0.48	
	3300					1970	21710	0.40	
Technical Parameters of ZGS22-G(F) -35kV Step-up Transformer	800	35	±2×2.5 ±5%	0.69 0.62	Dyn11	860	7850	1.05	6.5
	900					940	8560	1	
	1000					1020	9270	0.9	
	1250					1200	11000	0.85	
	1600					1450	13200	0.8	
	1800					1600	14400	0.8	
	2200					1850	16750	0.7	
	2400					1960	17860	0.65	
	2700					2200	19500	0.6	
	3300					2500	22700	0.5	

## YBH Chinese/European Style Box-Type Substation

- Integrated Design:** Each unit is engineered with a unified and optimized structure. The intelligent monitoring system adopts a rear plug-in configuration, following a design philosophy of inter-unit independence, achieving a truly modular and scalable design.
- Stable and Reliable:** The transformer is equipped with a dual-winding configuration to enhance stability and reliability. Standardized communication protocols improve system dependability while simplifying operation. Industrialized production and testing processes further ensure consistently high product quality.
- Intelligent Monitoring:** The system provides comprehensive monitoring capabilities, including full electrical parameter monitoring, transformer non-electrical quantity monitoring (such as oil temperature and winding temperature), fire protection monitoring, environmental monitoring, and complete switch operating status monitoring. Remote operational control is supported via a dedicated control system, mobile app, and cloud-based operation and maintenance center.
- Comprehensive Switch Status Monitoring:** The system covers a full range of switch status monitoring, including transformer non-electrical status, AC low-voltage switch status, AC high-voltage switch status, incoming line switch status, and other customizable switch statuses as required.



## Technical parameters

Technical Parameters of box-type Substation

Item	Rated capacity (kVA)	Voltage combination and branching range			Con-nection group	No-load loss (W)	Load loss (W)	No-load current (%)	Impedance voltage (%)
		High voltage (kV)	High voltage branching range (%)	Low voltage (kV)					
YBH - Chinese/European Style Box-Type Substation	3300	35	±2×2.5 ±5%	0.69 0.62 0.9 0.95 1.14	Dyn11	2500	22700	0.5	6.5-8.0
	4400					3100	27800	0.45	
	5500					3760	31900	0.45	
	6600					4350	34400	0.45	
	7700					5630	35460	0.45	
	8800					6230	39200	0.45	
	9900					6950	42600	0.45	
	11000					7510	46100	0.45	

## ZBW Prefabricated Box-Type Substation

This product is designed and manufactured in full compliance with the national standard GB/T 17467 High-Voltage/Low-Voltage Prefabricated Substation. Featuring a compact, pre-assembled structure, the substation integrates high-voltage switchgear, transformer, and low-voltage distribution equipment into a single, factory-tested enclosure, enabling rapid on-site deployment with minimal civil works.

The product is widely applied across a broad range of power distribution scenarios, including urban public distribution networks, street lighting systems, industrial and mining enterprises, residential communities, commercial complexes, hotels, parks, oil fields, ports, and temporary construction sites. It supports both ring-network and radial (terminal) power supply configurations, offering flexible and reliable network integration.

The substation enclosure is constructed with weather-resistant, corrosion-proof materials and incorporates ventilation and condensation prevention measures, ensuring reliable performance under harsh environmental conditions. Its compact footprint and aesthetically coordinated exterior allow seamless integration into urban and commercial landscapes. With standardized interfaces, convenient maintenance access, and a high degree of factory prefabrication, the ZBW series significantly reduces installation time and overall project costs, making it an ideal solution for diverse power distribution requirements.



## Technical parameters

Technical Parameters of ZBW Prefabricated Box-Type Substation

Item	Unit	High-voltage Electrical Apparatus	Transformer	Low-voltage Electrical Apparatus
Rated voltage	kV	6/10	6/0.4 10/0.4	0.4
Rated capacity	kVA		50-1600	
Rated Current	A	630		1000-2500
Rated Short-circuit Breaking Current	kA	16.20		
Rated Short-time Closing Current	kA	31.5.40		
Rated Short-time Withstand Current	kA	16.20 (4S)		15(Is)
				30(Is)
Rated Peak Withstand Current	kA	40.50		30
				63
Power frequency withstand voltage (1min)	kV	Phase-to-Earth and Phase-to-phase 23/42	35 (Oil-immersed)	≤0.3.2
		Isolating distance 28/48	28 (Dry-type)	>0.3 2.5
		Phase-to-Earth and Phase-to-phase 60/75	60/75	
Lightning Surge Withstand Voltage (Peak)	kV	Isolating distance 70/85		
Protection Class of Box		IP33		
Noise Level	dB		55	

## IV. High and low voltage equipment

### XGN15-12 Type 10kV Ring Main Unit

#### Product profile

The XGN15-12 ring main unit is an air-insulated switchgear designed based on a modular concept. Its flexible configuration and excellent personnel safety protection make it suitable for a wide range of applications. The unit features a lightweight and compact structure, simple and intuitive operation, and reliable mechanical interlocking mechanisms. A rear pressure relief channel is incorporated to safely vent internal arc energy, further enhancing the overall safety and reliability of the switchgear.

The XGN15-12 is widely used in airports, metro systems, commercial complexes, and a broad range of industrial and municipal applications. Its modular, customer-oriented design allows for versatile functional unit combinations, making it an ideal switchgear solution for automated power distribution systems.

#### Usage environment

- Altitude: not exceeding 2,500 meters above sea level.
- Ambient temperature: maximum +40°C; minimum -35°C.
- Relative humidity: daily average not exceeding 95%; monthly average not exceeding 90%.
- The surrounding atmosphere shall be free from significant levels of corrosive gases, flammable gases, water vapor, or other contaminants.



### Technical parameters

Technical Parameters of XGN15-12 Type 10kV Ring Main Unit

Item	Cabinet C	Cabinet F	Cabinet V		Cabinet CB	
	Load Switch Cabinet	Composite Apparatus	Vacuum Switch	Isolation Earth Switch	Vacuum Circuit Breaker	Isolation/Earth Switch
Rated voltage (kV)	12/24	12/24	12/24	12/24	12/24	12/24
Power Frequency Withstand Voltage (kV)	42/50	42/50	42/50	42/50	42/50	42/50
Lightning Surge Withstand Voltage (kV)	95/125	95/125	95/125	95/125	95/125	95/125
Rated Current (A)	630/630	Depends on fuse	630/630		1250/800	
Analysis Capability:						
Closed-loop Initiation Current (A)	630/630					
Initiation Current of Cable Charging (A)	135/135					
5% Rated Active Load Breaking Current (A)	31.5					
Breaking Current for Earth Fault (A)	200/150					
Breaking Current of Cable Charging for Earth Fault (A)	115/87					
Short-Circuit Breaking Current (kA)		Limited by Fuse	20/16		25/20	
Closing Capacity (kA)	63/52.5	Limited by Fuse	50/40	50/40	63/50	63/50
Short-Time Withstand Current, 2 Seconds (kA)	25					
Short-Time Withstand Current, 3 Seconds (kA)	21		20/16	20/16	25/20	25/20
Mechanical Life (Cycles)	5000	3000	5000	5000	10000	2000
Cabinet Size (Width * Depth * Height)	325*750*1337	325*750*1337	325*750*1337		696*820*2000	

## XGN-12(Z) T1250-31.5 Indoor Armored Fixed AC Metal-Enclosed Switchgear

### Product profile

The XGN-12(Z) T1250-31.5 indoor armored fixed AC metal-enclosed switchgear is designed and manufactured in full compliance with a comprehensive range of national and international standards, including IEC 62271-200, GB 3906, GB 3804, GB 16926, GB/T 11022, IEC 298, and DL/T 404. It is suitable for 12–24 kV, three-phase, 50 Hz AC power systems and is intended exclusively for indoor installation.

The switchgear features a straightforward and robust structure, flexible operation, and reliable mechanical interlocking mechanisms. Its adaptable design allows for customized configurations to meet the specific technical requirements of diverse users and application scenarios. The integration of advanced sensing technology and the latest generation of protective relays further enhances the product's functionality and versatility. The unit is compatible with both domestic VN1-12 and imported VD4 vacuum circuit breakers, offering flexibility in component selection.

### Usage environment

- Altitude: not exceeding 1,000 meters above sea level.
- Ambient temperature: maximum +40°C; minimum -15°C.
- Relative humidity: daily average not exceeding 95%; monthly average not exceeding 90%.
- The surrounding atmosphere shall be free from significant levels of corrosive gases, flammable gases, water vapor, or other contaminants.
- The installation site shall be free from frequent or severe vibration.



### Technical parameters

Technical Parameters of XGN-12(Z)T1250-31.5 Indoor Armored Fixed AC Metal-Enclosed Switchgear

No.	Name		Unit	XGN-12
1	Rated voltage		kV	12
2	Rated Current of Main Bus		A	630, 1250
3	Maximum Rated Current of Fuse		A	
4	Rated Insulation Level	1min Power Frequency Phase-to-Phase and Phase-to-Earth	kV	42
		Withstand Voltage Isolating distance	kV	48
		Lightning Surge Phase-to-Phase and Phase-to-Earth	kV	75
		Withstand Voltage Isolating distance	kV	85
1min Power Frequency Withstand Voltage for Auxiliary and Control Circuits			V	2000
5	Rated Frequency		Hz	50
6	Rated Short-Circuit Closing Current (Peak)		kA	63/80
7	Rated Peak Withstand Current		kA/s	63/80
8	Rated Transfer Breaking Current		kA	
9	Rated Short-Time Withstand Current/Time for Main Circuit		kA/s	25, 31.5/4
10	Rated Short-Time Withstand Current/Time for Earthing Circuit		kA	25, 31.5/4
11	Rated Voltage for Control Circuit		V	DC220, AC220
12	Mechanical Life		Times	2000
13	Protection Class			IP2X

# KYN61 Type Indoor Armoured Removable Switchgear

## Product profile

The KYN61 indoor armored withdrawable switchgear fully complies with GB 3906, GB/T 11022, IEC 60298, and DL/T 404. It is designed for indoor use in 3.6–12 kV, three-phase, 50 Hz AC single-bus sectioned power systems, providing electrical energy distribution, circuit control, protection, and monitoring. The withdrawable design allows convenient maintenance and rapid unit replacement without interrupting adjacent circuits.

## Usage environment

- Altitude: not exceeding 3,000 meters above sea level.
- Ambient temperature: maximum +40°C; minimum –40°C.
- Relative humidity: daily average not exceeding 95%; monthly average not exceeding 90%.



## Technical parameters

### 1. Technical Parameters of the KYN61 Series Switchgear

Item	Unit	Technical parameters	
Rated voltage	kV	12	
Rated Current	A	630 1250 1600 2000 2500 3150	
Rated Frequency	Hz	50	
Rated Short-time Withstand Current (4S)	kA	20 25 31.5 40	
Rated Peak Withstand Current	kA	50 63 80 100	
Rated Short-circuit Breaking Current	kA	20 25 31.5 40	
Rated Short-Circuit Closing Current	kA	50 63 80 100	
Rated Insulation Level	1min Power Frequency Power Receiving and Withstand Voltage	kV	Phase-to-Phase and Phase-to-Earth 42; Fracture 48
	Lightning Surge Power Receiving and Withstand Voltage		Phase-to-Phase and Phase-to-Earth 75; Fracture 85
Protection Class	The enclosure is IP4X, and the doors of the cabinet room and circuit breaker room are IP2X when open.		

### 2. Technical Parameters of the VSI Vacuum Circuit Breaker

Item	Unit	Technical parameters	
Rated voltage	kV	12	
Rated Current	A	630 1250 1600 2000 2500 3150	
Rated Frequency	Hz	50	
Rated Short-time Withstand Current (4S)	kA	20 25 31.5 40	
Rated Peak Withstand Current	kA	50 63 80 100	
Rated Short-circuit Breaking Current	kA	20 25 31.5 40	
Rated Short-Circuit Closing Current	kA	50 63 80 100	
Rated Insulation Level	1min Power Frequency Power Receiving and Withstand Voltage	kV	Phase-to-Phase and Phase-to-Earth 42; Fracture 48
	Lightning Surge Power Receiving and Withstand Voltage		Phase-to-Phase and Phase-to-Earth 75; Fracture 85
Rated Operating Sequence		Open - 0.3S - Close, Open - 180S - Close, Open - 180S - Close, Open - 180S - Close, Open - 180S - Close, Open (40kA)	
Rated Short-circuit Breaking Current	Times	50	30
Rated Short-Circuit Closing Current	Times	20000	

### 3. Characteristics of the VSI Vacuum Circuit Breaker Model

Item	Unit	Technical parameters	
Clearance between Open Contacts	mm	11±1	
Overstroke	mm	3.5±1	
Center Distance between Phases	mm	210 275	
Bounce Time of Closing Contact	ms	≤2	
Closing and Opening Asynchronism	ms	≤2	
Closing Time, when the operating voltage is	Maximum	ms	≤40
	Rated	ms	≤50
	Minimum	ms	≤60
Opening Time	ms	≤70	
Average Opening Speed	ms	0.9-1.3	
Average Closing Speed	ms	0.4-0.8	

When the circuit breaker is used to control 3-10kV motors, a metal oxide arrester must be added, and its concrete requirements shall be negotiated between the user and the manufacturer; when the circuit breaker is used to break capacitor banks, the rated current of the capacitors shall not be more than 80% of the current of circuit breaker.

## GGD Type AC Low-Voltage Switchgear

### Product profile

The GGD AC low-voltage switchgear fully complies with GB 7251, JB/T 5877, IEC 439, and other applicable standards. It is designed for indoor use in AC power systems with a rated voltage of 380–660 V and a frequency of 50–60 Hz, providing electrical energy distribution, circuit control, protection, and monitoring. The switchgear features a robust assembled structure with clearly separated functional compartments, ensuring safe and organized wiring. Its rational layout offers ease of operation and maintenance, while reliable interlocking mechanisms enhance personnel safety. The GGD series is widely applied in power plants, substations, industrial facilities, and commercial buildings.

### Usage environment

- Altitude: not exceeding 2,000 meters above sea level.
- Ambient temperature: maximum +40°C; minimum -5°C; 24-hour average not exceeding +35°C.
- Relative humidity: not exceeding 50% at maximum temperature of +40°C; higher relative humidity is permissible at lower temperatures.
- Installation inclination: not exceeding 5° from the vertical plane.
- The installation site shall be free from severe vibration, mechanical impact, and exposure to corrosive substances that may damage electrical components.



### Technical parameters

Technical Parameters of the GGD Type AC Low-Voltage Switchgear

Item	Unit	Technical parameters	
Rated Voltage of Main Circuit	V	AC 380, 660	
Rated Voltage of Auxiliary Circuit	V	AC 220, 380; DC 110, 220	
Rated Frequency	Hz	50(60)	
Rated Insulation Voltage	V	660(1000)	
Rated Current	A	≤3150	
Short-Time Withstand Current	kA/1s	15, 30, 50	
Peak Withstand Current	kA/0.1s	30, 63, 105	
Power Frequency Test	Main Circuit	(V/min)	2500
	Auxiliary Circuit		1760
Bus		A, B, C, N	
Protection Class		Ip30	

## GCS Low-Voltage Draw-out Switch Cabinet

### Product profile

This product fully complies with IEC 60439-1, GB 7251, JB/T 5877, IEC 439, and other applicable standards. It is designed for indoor use in AC power systems with a rated voltage of 380–600 V and a frequency of 50–60 Hz, providing electrical energy distribution, circuit control, protection, and monitoring. The switchgear adopts a modular withdrawable design, allowing flexible configuration and convenient maintenance. Its standardized structure ensures high interchangeability of functional units, making it well suited for a wide range of industrial and commercial power distribution applications.

### Usage environment

- Altitude: not exceeding 2,000 meters above sea level.
- Ambient temperature: maximum +40°C; minimum -5°C; 24-hour average not exceeding +35°C.
- Relative humidity: not exceeding 50% at maximum temperature of +40°C; higher relative humidity is permissible at lower temperatures.
- Installation inclination: not exceeding 5° from the vertical plane.
- The installation site shall be free from severe vibration, mechanical impact, and exposure to corrosive substances that may damage electrical components.
- Special requirements can be discussed and accommodated upon consultation with our company.



### Technical parameters

Technical Parameters of the GCS Low-voltage Draw-out Switch Cabinet

Item	Unit	Technical parameters	
Rated Voltage of Main Circuit	V	AC 380, 660	
Rated Voltage of Auxiliary Circuit	V	AC 220, 380; DC110, 220	
Rated Frequency	Hz	50 (60)	
Rated Insulation Voltage	V	660 (1000)	
Rated Current	Horizontal Bus	A	≤4000
	Vertical Bus	A	1000
Rated Short-time Withstand Current of Bus	kA/1s	50, 80	
Rated Peak Withstand Current of Bus	kA	105, 176	
Protection Class		IP30, IP40	

## KYN28-12(Z)/T4000-40 indoor armored removable metal-enclosed switchgear

### Product profile

The KYN28-12 armored metal-enclosed switchgear (new flat-top cabinet) fully complies with GB 3906, GB/T 11022, IEC 298, and DL/T 404 standards. Designed for indoor use in 3.6–12 kV, three-phase, 50 Hz AC single-bus and single-bus sectioned power systems, it provides electrical energy distribution, circuit control, protection, and monitoring. The switchgear features highly reliable interlocking mechanisms that fully satisfy the “five-prevention” safety requirements, and is compatible with domestic VS1, VS1+, and VSM vacuum circuit breakers as well as the ABB VD4 series.

### Usage environment

- Altitude: not exceeding 1,000 meters above sea level.
- Ambient temperature: maximum +40°C; minimum –10°C.
- Relative humidity: daily average not exceeding 95%; monthly average not exceeding 90%.
- The surrounding atmosphere shall be free from significant levels of corrosive gases, flammable gases, water vapor, or other contaminants.
- The installation site shall be free from frequent or severe vibration.

### Technical parameters

#### 1. KYN28 series switchgear technical parameters

Item	Unit	Technical parameters
Rated voltage	kV	12
Rated Insulation level	1min power frequency withstand voltage (phase to ground /fracture)	kV 42/48
	Lightning impulse withstand voltage (phase to ground fracture)	kV 75/85
Rated frequency	Hz	50
Rated current	A	630~3150
Main bus rated current	A	1250 1600 2000 2500 3150
Branch bus rated current	A	630 1250 1600 2000 2500 3150
Rated short-time withstand current (4S)	kA	16 20 25 31.5 40 50
Rated peak withstand current	kA	40 50 63 80 100 125
Protection level		The enclosure is IP4X,the circuit breaker door open time is IP2X
Overall dimensions (width*depth*height)	mm	800 (1000) x 1500 (1660) x 2300
Weight		800~1200



#### 2. VD4, VSI vacuum circuit breaker technical parameters

Item	Unit	Technical Parameters	
Rated voltage	kV	12	
Rated Insulation level	1min power frequency withstand voltage	kV	42
	Lightning impulse withstand voltage	kV	75
Rated frequency	Hz	50	
Rated current	A	630 1250 1600 2000 2500 3150	
Rated symmetrical short-circuit breaking current (rms)	kA	16 20 25 31.5 40 50	20 25 31.5 40
Asymmetric short -circuit breaking current (rms)	kA	17.4 21.8 27.3 34.3 43.6 55.8	21.8 27.4 34.3 43.6
Rated peak withstand current (peak)	kA	40 50 63 80 100 125	50 63 80 100
Rated short-time withstand current (rms) (4s)	kA	16 20 25 31.5 40 50	20 25 31.5 40
Transient recovery voltage rise	kV/ms	0.345 0.415	
Transient recovery voltage peak	kV	20.6 30	
Operation sequence		Open -0.3s Close, Open -180s- Close, Open	
Mechanical operating life	nos	30000	20000
Closing time	ms	≤70	≤100
Opening time	ms	≤45	≤50
Arcing time	ms	≤15	≤15
Breaking time	ms	<60	≤65
Closing coil power	VA	250	
Breaking coil power	VA	250	
Control voltage	V	110	220