



Tianjin Electrical Energy Equipment

Quality Guaranteed, High Efficiency and
Cost-effectiveness, Shorter Lead Times

COMMITTED TO BEING THE WORLD'S LEADING
DRY-TYPE AIR-CORE REACTOR MANUFACTURER



Tianjin Jingwei Zhengneng Electrical Energy Equipment Co., Ltd.

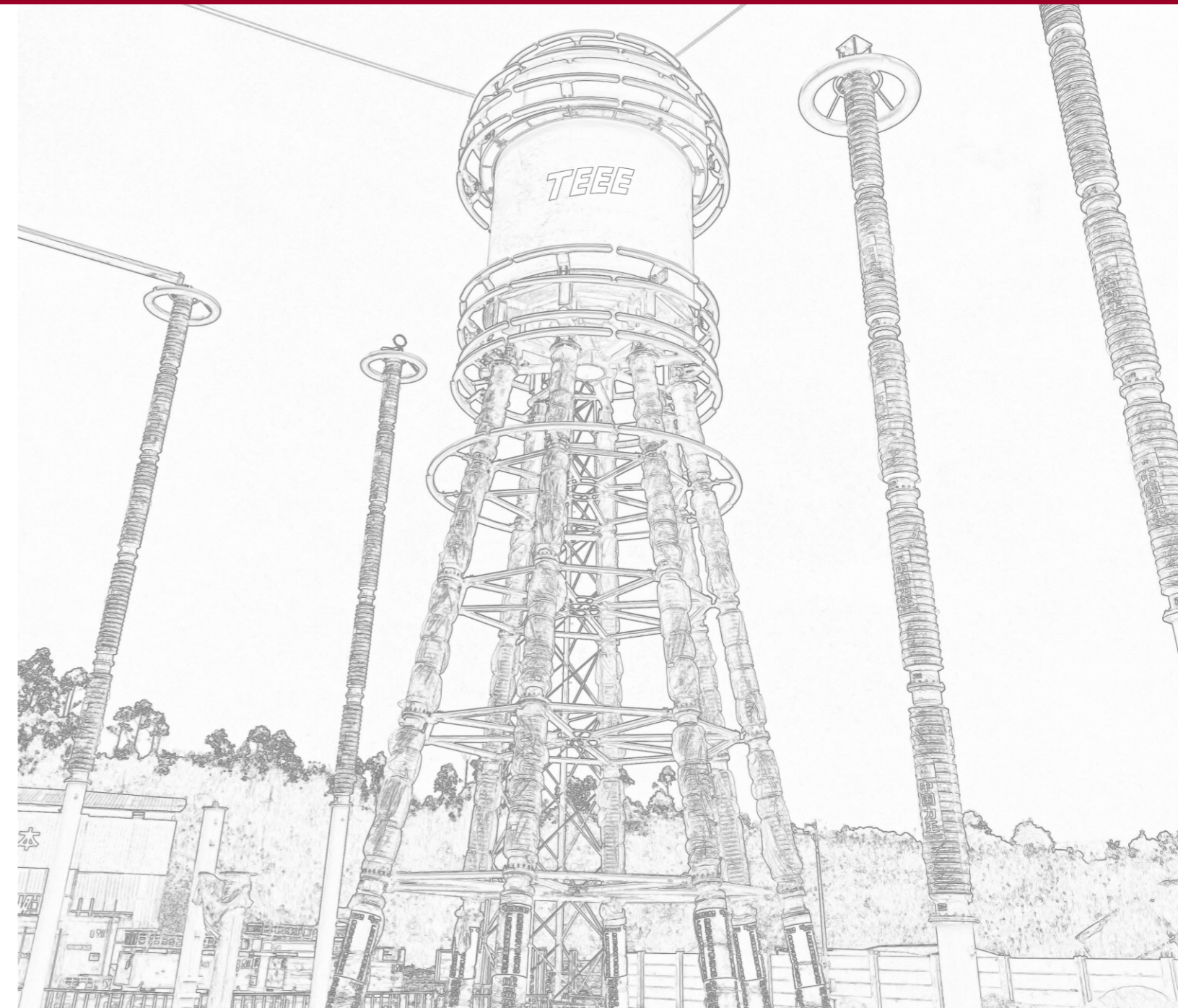
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Tianjin
Electrical
Energy
Equipment



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Highlights

- Successfully designed and developed the world's first $\pm 1100\text{kV}$ Dry-Type Air-Core Smoothing Reactors. The reactors were specially manufactured and delivered to SGCC in 2018 for the Changji-Guquan UHV DC transmission project, and has been running perfectly since 2018.
- Developed the first 500kV high voltage Dry-Type Air-Core Shunt Reactors in the world, and these reactors have been delivered to the Sylvania Project in Brazil in 2023.
- Successfully designed and developed the world's first $\pm 800\text{kV}$ U HV Dry-Type Air-Core Converter Reactor, demonstrating our world-class technical capabilities and providing the springboard for advancement in this area.
- The world's first 500kV-class high-voltage DryType Air-Core converter reactor has been utilized in the $\pm 800\text{kV}$ Baihetan-Jiangsu UHV DC transmission project.
- Developed the highly reliable online fault monitoring system for Dry-Type Air-Core Reactors.



Enterprise Profile

Tianjin Jingwei Zhengneng Electrical Energy Equipment Co, Ltd. (TEEE) was founded in 2014. With its headquarters in Tianjin, China, TEEE develops and manufactures small, medium, large and extra - large Drytype Air-core reactors and line traps. Our products are reliable and of highquality, covering the complete range of voltages up to 1100kV and applications, like SVG, SVC, VSC, HVDC and HVAC.

TEEE has a total of 200 employees, with a strong technical team of 32 engineers. TEEE has three R&D centers in China, located in Tianjin, Beijing and Changsha, and 16 overseas offices worldwide.

Adopt a dual-brand strategy : "TEEE" for Overseas Market and "JWZN" for Domestic Market.

3

Established 3 R&D centers, located in Tianjin, Beijing and Changsha.

52⁺

By 2024, 52 $\pm 500\text{kV}$ and above ultra-high voltage and UHV transmission lines have been successfully supplied.

16000⁺

Supplied over 16,000 reactors for HVDC & HVAC transmission lines, VSC transmission lines, SVC, SVG, FACTS, capacitor banks globally until 2023.

35⁺

Exported to over 35 countries worldwide, including Brazil, USA, Canada, Mexico, Spain, Poland, Chile, South Africa, Egypt, India, Japan, South Korea, Vietnam and others.

History



2014

- Establishment of Tianjin Jingwei Zhengneng Electrical Energy Equipment Co., Ltd. (as "TEEE"). It specializes in the production of various type of Dry-type Air-core reactors.



2015

- Roger Alberton, the former general manager of Trench Canada joined TEEE.
- ±800kV 6250A smoothing reactor qualified by the CMIF (China Machinery Industry Federation).
- 110kV 80000kVA Dry-Type Shunt reactor qualified by CMIF.
- 110kV 9600kVA Dry-Type series reactor qualified by CMIF.

2016

- Bid on and won the contract of the ±1100kV Smoothing Reactors for the world's Highest voltage level ±1100kV Changji-Guquan UHVDC Project.
- Bid on and won 3 HVDC lines @ 800kV.
 1. Ximeng-Taizhou±800kV UHV DC transmission project
 2. Shanghaimiao-Shandong ±800kV UHV DC transmission project
 3. Zhalute-Qingzhou ±800kV UHV DC transmission project

2017

- The ±1100kV UHV Smoothing Reactor was internationally recognized as leading-edge technology by CMIF.
- TEEE was recognized as a National High-Tech Enterprise by Tianjin Science and Technology Bureau.

2018

- Bid on and won ±500 kV Zhangbei Flexible HVDC Project (VSC).
- Bid on and won Wudongde ±800 UHV multi-terminal DC project.
- Launched an initiative to design and develop ±800kV Dry-type Converter Reactor.
- Established "Hunan University- Jingwei Joint R&D Center".
- Established "Beijing Jingwei Technology Research Institute".
- Launched a project to develop 500kV high-voltage large-capacity current-limiting reactor.

2019

- Bid on and won Northern Shaanxi-Wuhan ±800kV UHV DC Project.

2020

- The ±800kV converter reactor passed the appraisal from the CMIF.
- The ±500kV current limiting reactor passed the appraisal from the CMIF.
- Bid on and won Shanxi-Jinzhong 1000kV UHV AC project.
- Bid on and won Pakistan Binjiasheng Phase III 900MW Combined Cycle Power Station and Power Transmission and Transformation Project.

2021

- Bid on and won Baihetan-Jiangsu ±800kV UHV DC project.
- Bid on and won Jingmen-Wuhan AC project.
- Bid on and won Baihetan-Zhejiang ±800kV UHV DC project.
- A Dry-type Air-core light weight converter reactor suitable for offshore wind power was successfully developed and obtained qualification by CMIF.
- General Manager Wu Yukun was honored as Special Allowance Expert by China State Council.

2022

- Built the world's first 500kV Dry-type Air-core shunt reactor.
- Won contract and the 500kV Dry-type Air-core shunt reactors were delivered to Brazil.
- Won the Fujian North power to South UHV AC power transmission and transformation project.
- TEEE was recognized as a technology "Little Giant " enterprise by the Ministry of Industry and Information Technology.

2023

- Upon the acquisition of DKNC and Yubo Electric, TEEE has entered into the model of Group development.



- Bid on and won 7 HVDC transmission lines project.
 1. Longdong-Shandong ±800kV UHV DC transmission project
 2. Jinshang-Hubei ±800kV UHV DC transmission project
 3. Ningxia-Hunan ±800kV UHV DC transmission project
 4. Hami-Chongqing ±800kV UHV DC transmission project
 5. Zhangbei-Shengli 1000kV UHV AC project
 6. Tianjin South 1000kV Substation Expansion Project
 7. Chuanyu 1000kV UHV AC Project
- Over 16,000 reactors were built and delivered.

2024

- TEEE has built a new UHV, large-capacity, high-end dry-type air-core reactor plant covering an area of approximately 22,000 square meters, which will enable it to meet the future supply demand for large reactors such as high-voltage shunt reactors and UHV smoothing reactors.
- Bid on and won 7 HVDC & HVAC transmission lines projects.
 1. Shaanxi North - Anhui ±800kV UHV DC transmission project
 2. Gansu - Zhejiang ±800kV UHV DC transmission project
 3. Jiangsu Yangzhou - Zhenjiang ±200kV DC transmission project
 4. Aba - Chengdu East 1000kV UHV AC Transmission Project
 5. Brazilian ANEEL Auction project 001/2024 -LOT 2 & LOT13, LOT1 & LOT5
 6. ±336kV Borwin6 German offshore wind project
 7. Brazilian ITAIPU ±600kV high voltage DC transmission retrofit project

Now.....

- The new product "Compact Dry-Type Air-core Converter Reactor" has been appraised by academicians and experts from the power industry organized by the China Machinery Industry Federation, and its technical level has reached the international leading level.
- TEEE Reactor Production Workshop was recognized as a "Digital Workshop" by Tianjin Municipal Bureau of Industry and Information Technology.

Global Business Network



As a leading manufacturer of Dry-type Air-core Reactor in China, TEEE has established its strong production base in Tianjin, and also set up its knowledgeable and dedicated R&D center in Tianjin, Beijing and Changsha. International market is our next most important step, as which TEEE has opened its overseas branch offices In Korea, Toronto and Rio de Janeiro, and construct a reliable and capable agents network worldwide. All people are customer-focused, dedicated, efficient and with integrity. We are committed to making TEEE the foremost manufacturer of high quality reactors in the world.

Corporate Culture

Mission

Focus on customer needs and expectations, strive to provide competitive, high-quality power equipment and help customers build high-quality power grids.

Vision

Driven by technological innovation, we are committed to becoming a global supplier and leader of high-quality reactors.

Value

Customer first, integrity and progress, professionalism and efficiency, win-win cooperation.

Certification

TEEE adopts the most advanced comprehensive quality management system and has obtained five system certificates, including ISO9001 quality, ISO14001 environment, ISO45001 occupational health and safety, ISO500001 energy, and product carbon footprint certification.



Qualification & Honor

After years of development, the company currently owns more than 70 national patents, including 10 invention patents; it owns 2 software copyrights. Its eight independently developed achievements, including "1100kV Dry-type Air-core smoothing reactor" and "compact Dry-type Air-core converter reactor", have been appraised by academicians and experts from the power industry organized by the China Machinery Industry Federation, and its technical level has reached the international leading level.

TEEE is currently a high-tech enterprise that is supported by the state. It has undertaken national key new products and national key scientific and technological achievements transformation projects for many times. Its independently developed "Ultra-high Voltage Flexible DC Converter Reactor Key Technology and Application" and many other products have won honors such as the "Machinery Industry Science and Technology Special Award". At the same time, the company vigorously develops green and low-carbon transformation and builds a new power system based on clean energy. It has now obtained qualification certificates such as "Tianjin Green Factory" and "Product Carbon Footprint Certification Certificate".

70⁺
The company currently owns more than 70 national patents

2⁺
The company currently owns 2 software copyrights

8⁺
8 achievements and technologies have reached the international leading level

天津市绿色工厂

高新技术企业证书

天津市企业技术中心

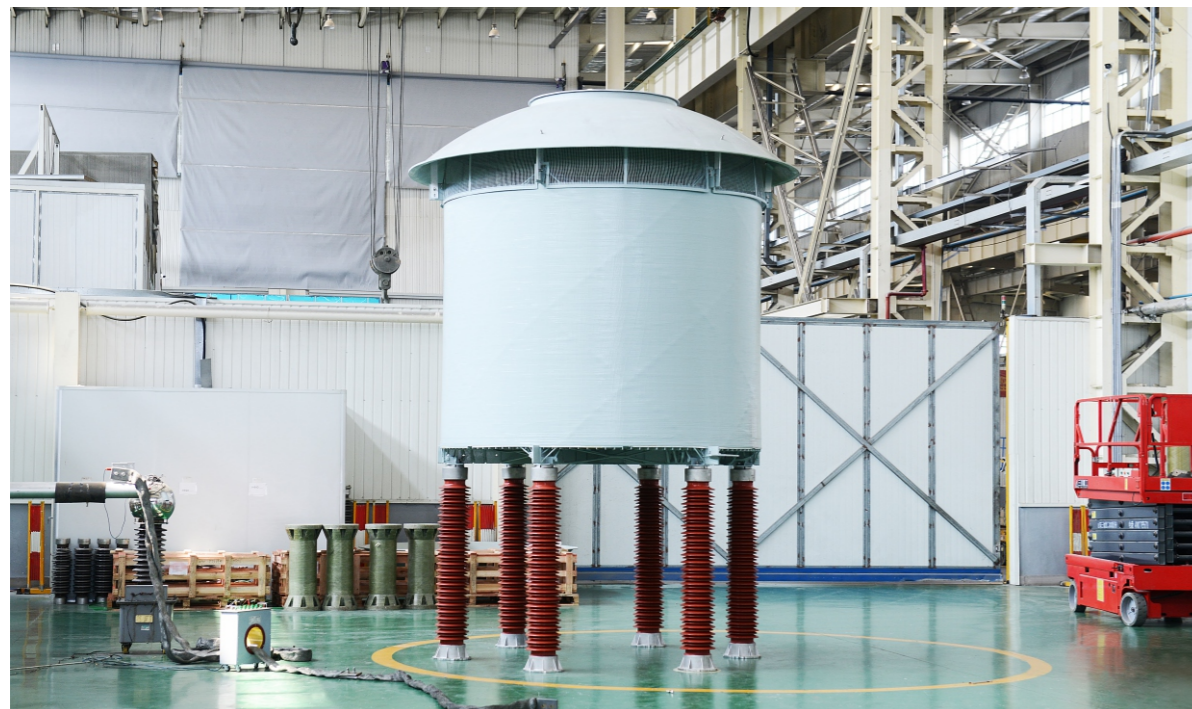
天津市“专精特新”中小企业

2023年度电力科技创新奖证书

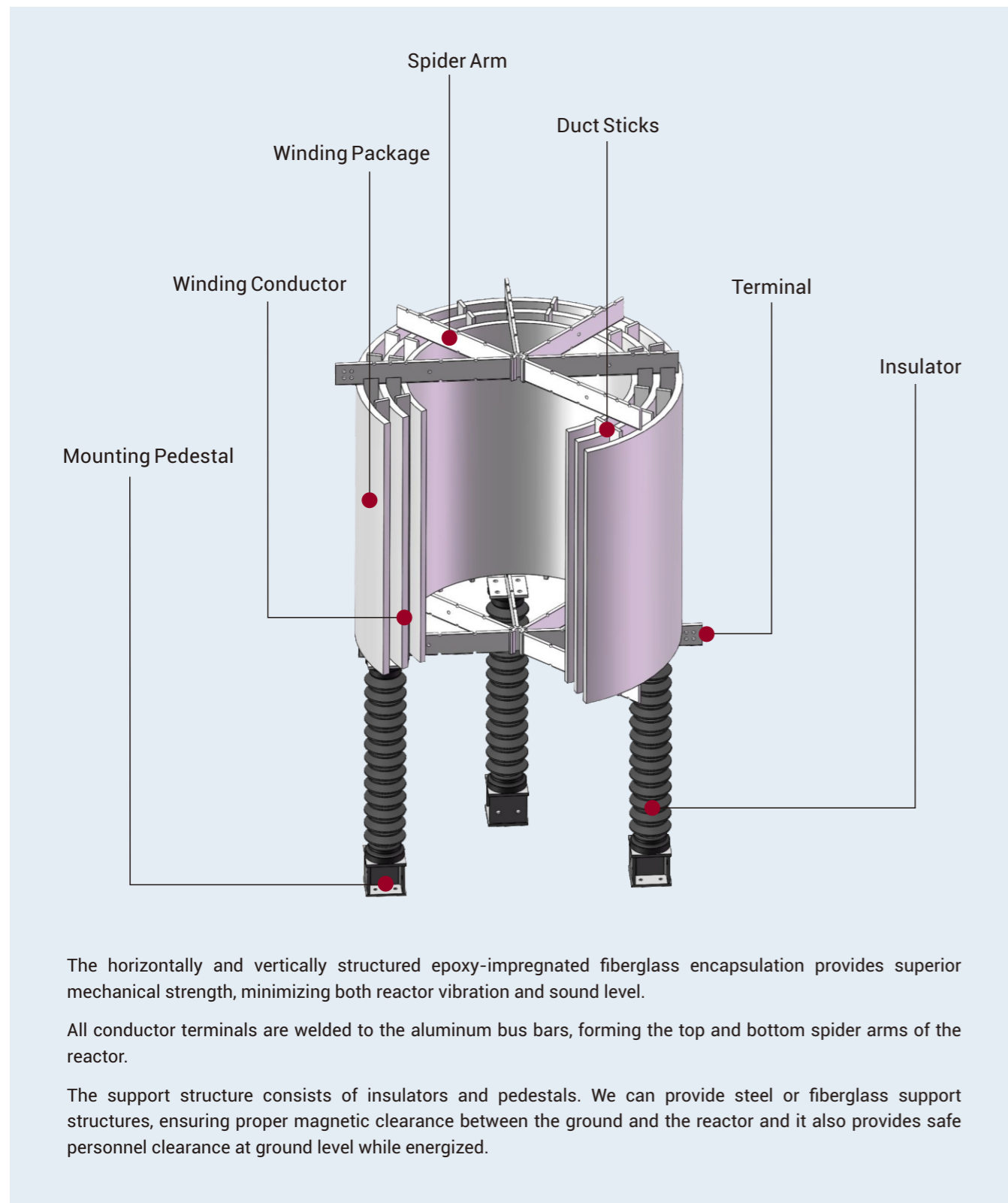
荣誉证书

Product Introduction

TEEE has the capability to design and manufacture Dry-Type Air-Core Reactors, which can meet the requirements of domestic and international standards such as GB, IEC, IEEE and ANSI. The voltage level covers the full range from 6kV to 1100kV. TEEE is the world's leading reactor manufacturer and its quality control capabilities are excellent, especially in the field of large reactors for ultra-high voltage, large capacity and AC and DC power transmission and transformation projects. At the same time, TEEE enjoys high ranking market brand recognition.



Basic Reactor Construction



Advantages of TEEE Dry-Type Air-Core Reactors

- Light weight and small size;
- Large temperature rise margin and service life in excess of 35 years;
- No insulating oil, more environmentally-friendly;
- Explosion-proof design, environment-resistant, maintenance-free;
- No iron core, low noise;
- Epoxy resin-impregnated fiberglass encapsulation, high fiberglass transition temperature, strong short-circuits resistance;
- In-house manufactured low-loss conductors, a fixed length with zero defects.

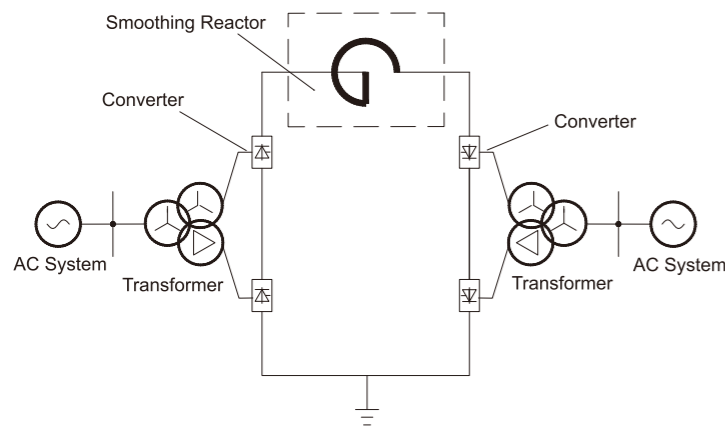
Main Products

TEEE specializes in the design, production, and selling of small, medium and large Dry-Type Air-Core Reactors, and line traps. Our products are reliable and of high-quality, covering the complete range of voltages and applications.

Smoothing Reactor

Up to 1100kV

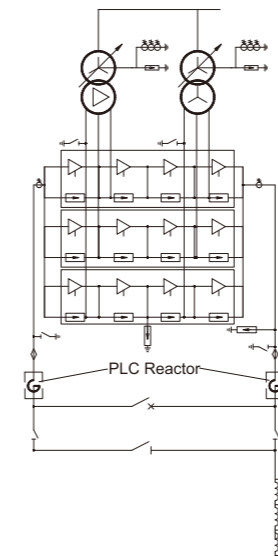
The smoothing reactor is connected in series in high-voltage DC converter stations or installed in the middle of back-to-back DC lines to reduce harmonic currents in DC lines, limit inrush currents when a fault occurs, limit the rise rate of DC reverse-phase currents and improve the stability of the transmission system.



PLC Reactor

Up to 800kV

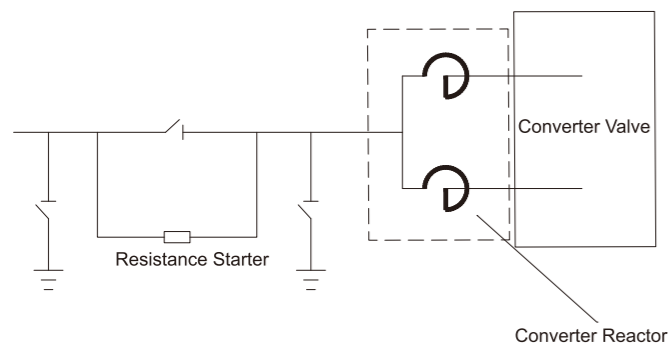
The PLC reactor is the main component of the noise filtration and is usually installed on the AC or DC side of the converter station. It can effectively filter out high-frequency harmonics to prevent interference with PLC signals in the power system, prevent damage to PLC modules caused by high-order harmonic impacts and prevent high-frequency noise from affecting the power carrier communication (PLC) system on the AC and DC input and output lines of the converter station or other PLC communication systems used in power transmission projects.



Converter Reactor

Up to 800kV

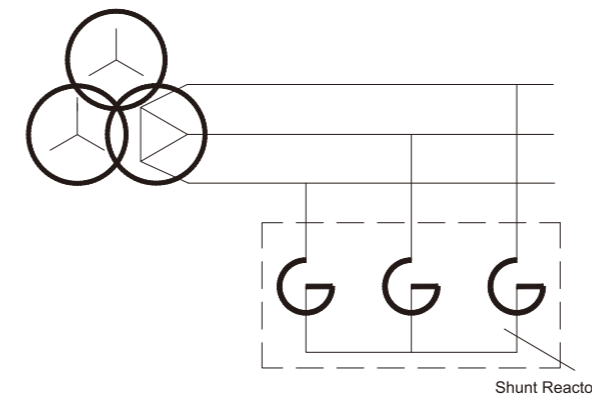
The converter reactor is located between the flexible DC converter valve and the connecting transformer. It can be installed on either the DC or the AC side of the converter valve. The converter reactor and the leakage reactance of the connecting transformer together constitute the commutation reactance of the converter station, which mainly plays the role of controlling power transmission, filtering and suppressing current fluctuations on the AC side. In addition, it can restrain the fault current of the bridge arm when the bridge arm commutation and short circuit current rise too fast.



Shunt Reactor

Up to 500kV

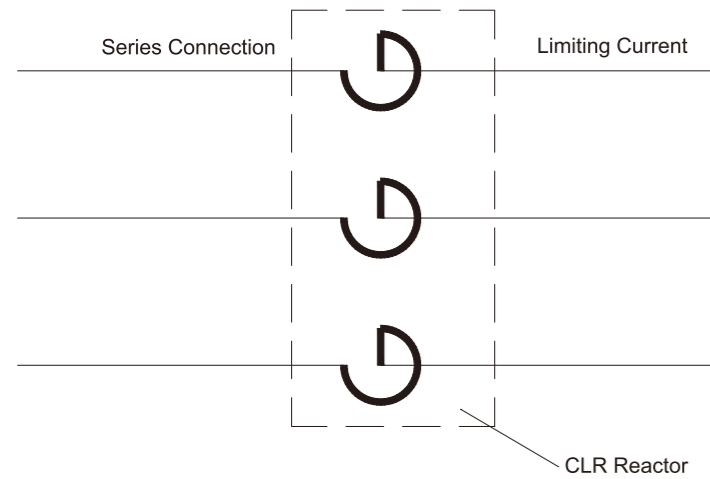
The shunt reactor is connected between the phase and the ground, between the phase and the neutral point, between phases in the power system to play the role of reactive power compensation. It is used to compensate the capacitive charging power of ultra-high voltage lines, which is helpful to limit the increase of power frequency voltage and operating over-voltage in the system, reduce the insulation level of ultra-high voltage system, improve the voltage distribution along the line and increase the stability and power transmission capacity of the system.



Current-Limiting Reactor

Up to 750kV

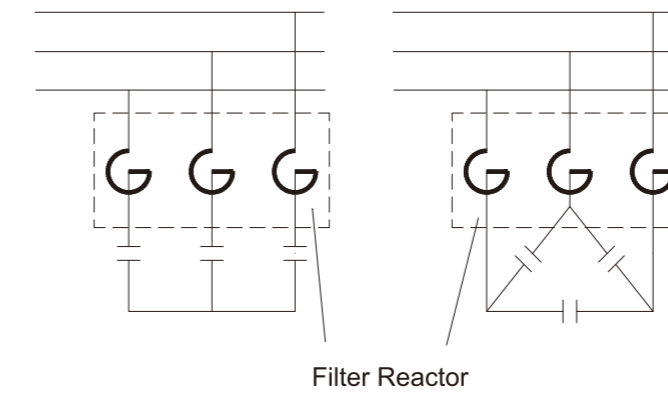
The current-limiting reactor is connected in series in the system line to limit the short-circuit current or fault current of the system to a specified value when a system fault occurs.



Filter Reactor

Up to 1100kV

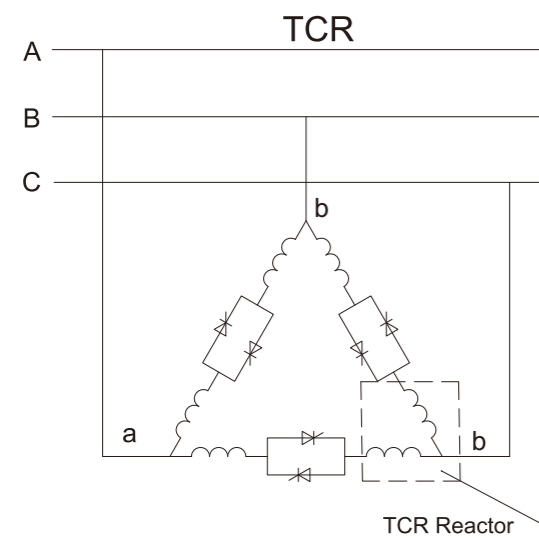
Filter reactors and filter capacitor banks are used in series or parallel to form a tuned filter circuit, which is used to filter out harmonics of specified frequencies and reduce the harmonic content on the line.



Thyristor-Controlled Reactor (TCR)

Up to 66kV/300 Mvar per Phase

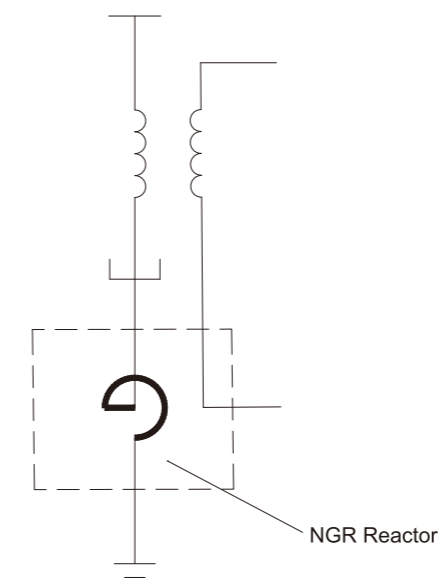
Thyristor-Controlled Reactor (TCR), is a static reactive power compensation device that is connected in parallel with the system and absorbs reactive power from the system. By controlling the conduction angle of the thyristor valve, its equivalent inductance changes continuously.



Neutral Grounding Reactor

Up to 66kV

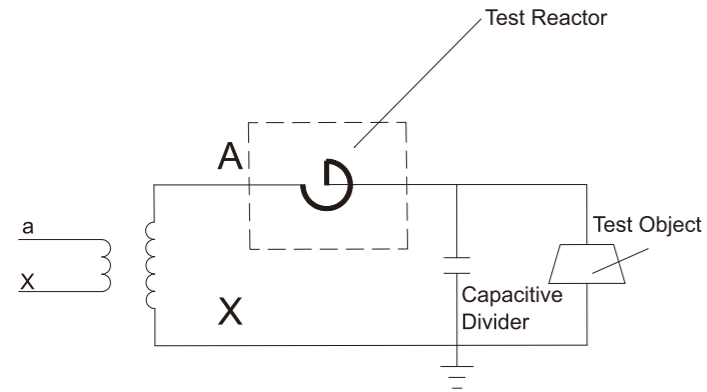
The neutral grounding reactor is installed between the high impedance or the three-phase neutral point of the transformer and the ground. It is a single-phase reactor used to limit the ground current to a specified value when the system is grounded.



Test Reactor

A custom-made solution

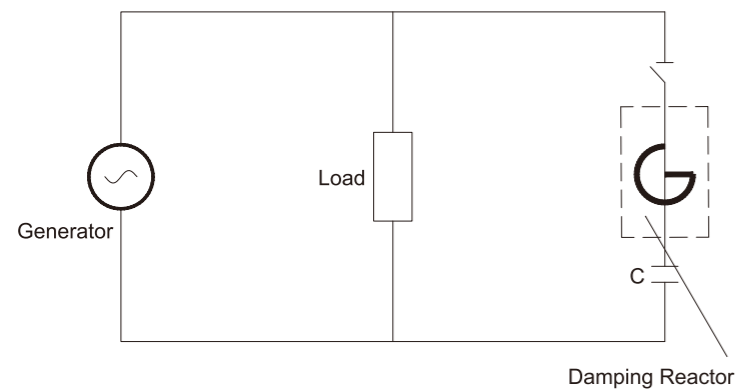
The test reactor is installed in the test circuits of high-voltage and high-power test chambers to adjust the test current. Typical application test circuits include current limiting, circuit breaker synthesis testing, inductive energy storage and simulated circuits, etc.



Damping Reactor

Up to 1100kV

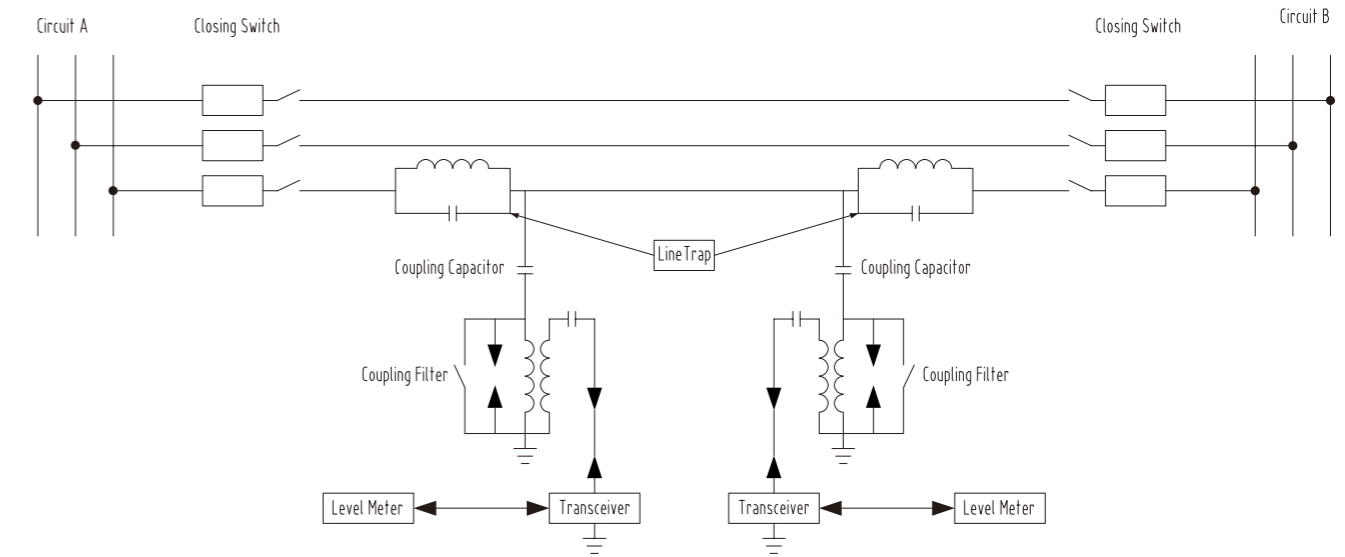
The damping reactor is connected in series with the capacitor bank or dense capacitor to limit the closing inrush current of the capacitor, limit the external inrush current generated when a fault occurs or an adjacent capacitor is switched or detuning of the power supply container group to avoid resonance with the power system.



Line Traps

Up to 750kV, 500KHz

Line Traps are connected in series in high-voltage and ultra-high-voltage AC power lines to prevent excessive loss of carrier signals with frequencies generally in the 40-500KHz range under various conditions in the power system and to minimize interference from adjacent carriers.



TEEE New 500 kV Shunt Reactor

Introduction

Shunt reactors are connected in a parallel configuration to the power system to compensate for capacitive reactive power of transmission and distribution systems. This ensures that operating voltages are maintained within acceptable operating levels.

Shunt reactors are constructed as either "Oil-Immersed" or "Dry-Type".

Dry-Type reactors consist only of encapsulated windings, supported by the appropriate insulators.



TEEE Dry-Type Reactor VS. Oil-Type Reactor (Example: 500kV/20M)

ITEM	Oil-Type	TEEE Dry-Type
Footprint(LXWXH)	3m X 8.1m	3m X 8m
Weight (T)	80T	16T
Loss (%loss/capacitor)	≤0.3%	≤0.3%
Self voltage-sharing capacity	None	Yes
Iron Core	Yes	None
Oil Need	Yes	None
Fire Protection	Yes	None
Field Installation	Hard	Easy
Delivery	Hard	Easy

Advantage of TEEE New Developed Shunt Reactors

Recap on TEEE Innovation Points

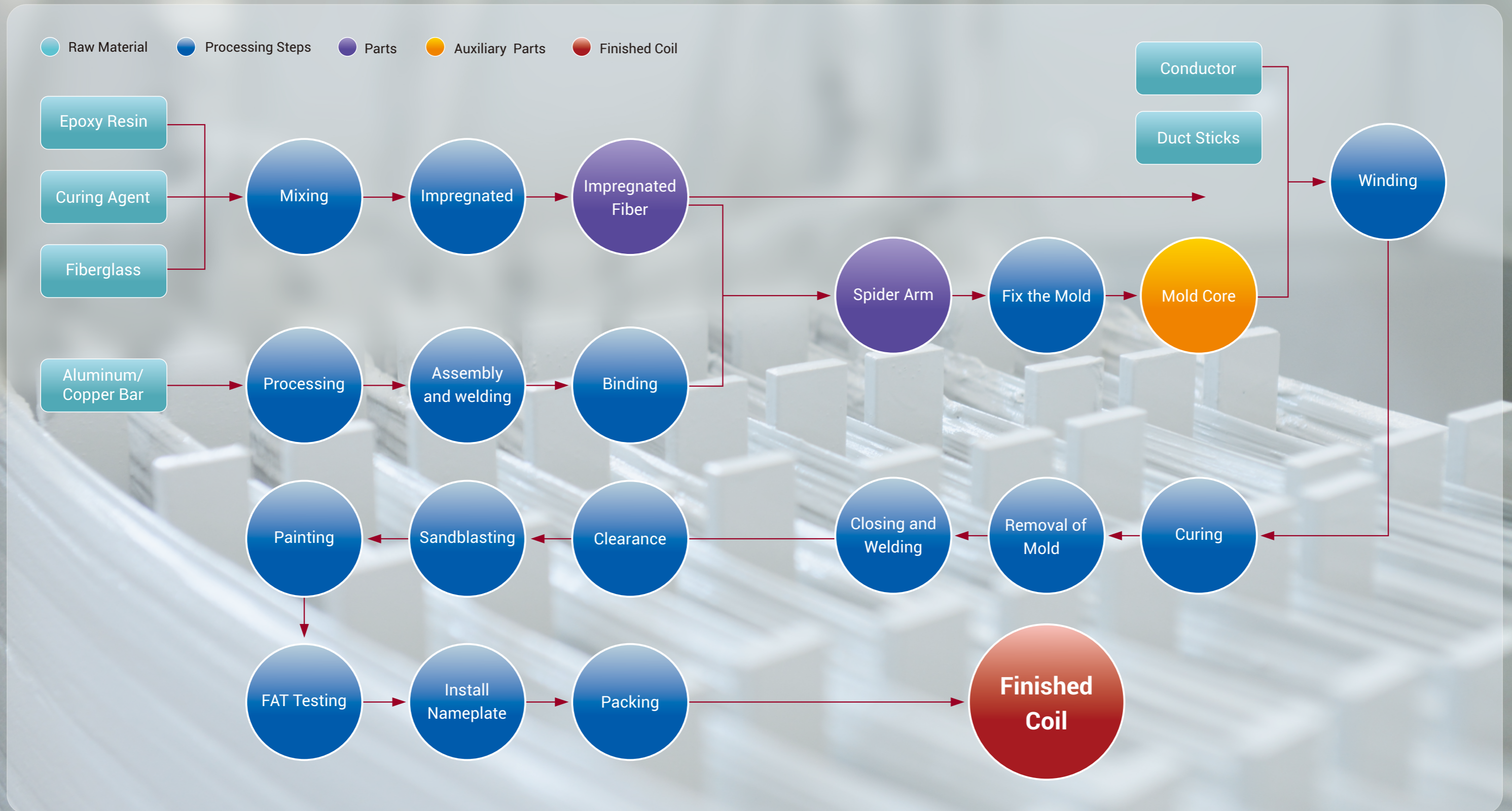
- Special "Modular" Design makes Developed New Shunt Reactors more compact.
- Good voltage equalizing performance, excellent tolerance to transient overvoltage.
- No iron core, low vibration, low noise.
- Only 20% of the weight of oil reactor, less occupation of land, completely replace the oil reactor, maintenance-free.
- Low heat generation, rain proof, bird proof, strong weather resistance and more reliable.
- Easy assembly and disassembly, fast and convenient transportation, great anti-seismic structure.
- Replaces Oil-Type shunt reactors and traditional Dry-Type Shunt Reactors.



Factory Views



Process Flow Chart



Quality Control

Incoming Inspection

- **Conductor:** size, overlap rate, insulation resistance, DC resistance, withstand voltage test
- **Epoxy Resin/Cure Agent/Imidazole:** compressive strength and glass transition temperature test
- **Fiberglass products:** dimensions, material verification reports, extended manufacturing supervision
- **Duct sticks:** dimensions, compressive strength and lightning impact test
- **Aluminum bar:** size, material report checking
- **Insulators:** dimensions, reports checking, tests witnessing
- **Stainless steel products:** dimensions, magnetic inspection, material report checking and extended manufacturing supervision
- **Fiberglass products:** dimensions, material reports checking and extended manufacturing supervision

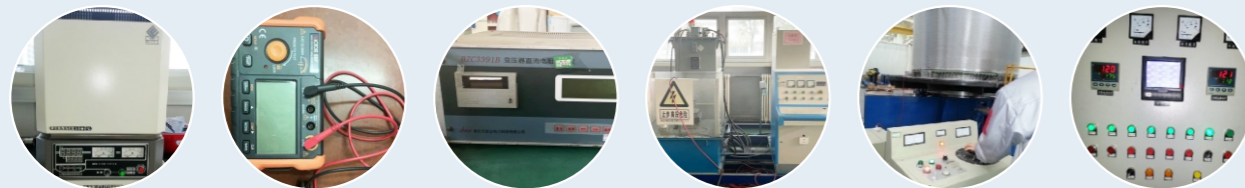


Testing Bay

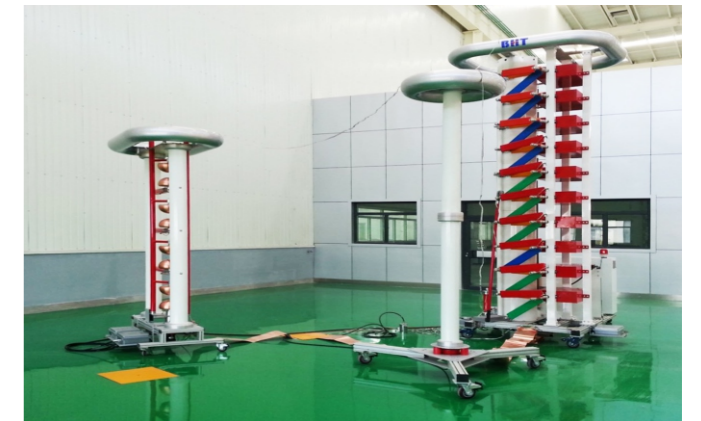


In-Process Inspection

- Glue content test of fiberglass
- AC Hi-pot Testing of small wire for winding
- AC Hi-pot Testing of cables for winding
- Insulation resistance and DC resistance tests before and after curing
- Record curing curve
- Dimensional inspection - conductors and windings



1000kV Hi-Pot Transformer



1000kV Impulse Generator

Routine Tests

- DC Resistance
- Inductance
- Power Losses
- Turn to Turn Test
- High Frequency Impedance

Type Tests

- Temperature Rise Test
- Lightning Impulse Test
- Chopped Wave Test
- Switching Impulse Test
- Sound Level Measurement

Special Tests

- Radio Influence Voltage (RIV)
- Short Circuit Test

Note: Specific tests are carried out according to customer requirements and different standards.



DC Temperature Rise Test on 800kV SMR at 6250A



Capacitor Banks (up to 60kV) for AC Temperature Rise Testing

Sales Achievement & Application Field

TEEE reactors have been installed on over 52 HV lines throughout China. TEEE also exported the new 500kV shunt reactors to Brazil, 220kV series reactors to Pakistan and a complete range of applications worldwide. In total, we have supplied over 15,000 reactors for SVC, HVDC, HVAC, FACTS, VSC, capacitor banks, etc. globally.

- 1line@1100kV HVDC
- 2line@ 500kV HVDC
- 27line@ 500kV HVAC
- 13line@ 800kV HVDC
- 9line@ 1000kV HVAC
- 22line@220kV~330kV AC

Fully compliant with technical specifications and full customer satisfaction.



Changji-Guquan ±1100kV UHVDC
1100kV Smoothing Reactor -HV



Wudongde ±800 UHVDC
Multi-terminal Project
800kV Smoothing Reactor-HV



Baihetan - Jiangsu ±800 kV UHV
DC project
545kV Converter Reactor-HV



Sichuan-Chongqing 1000kV AC
UHV project
110kV Shunt Reactor



Jinshang-Hubei ±800 kV UHV
DC transmission project
800kV Smoothing Reactor



Jinshang-Hubei ±800 kV UHV
DC transmission project
TDR Reactor



Changji-Guquan ±1100kV UHVDC
1100kV Smoothing Reactor-LV



Wudongde ±800 UHVDC
Multi-terminal Project
800kV Smoothing Reactor-LV



Baihetan - Jiangsu ±800 kV UHV
DC project
215kV Converter Reactor-LV



Zhebei ±800kV HVDC
110kV Filter Reactor



Jinshang-Hubei ±800 kV UHV
DC transmission project
DC Filter reactor



Shaanxi North - Wuhan ±800 kV UHV
DC transmission project
PLC Reactor



900MW Combined Cycle Power Station in Pakistan
220kV Current Limiting Reactor



CATL Xiapu Project
Converter Reactor, 1220A



NPPD Project in the U.S.
6667kVA Shunt Reactor



SILVÂNIA Substation Project in Brazil
500kV Shunt reactor



Knoxville Utilities Board Project in U.S
875A Neutral Grounding Reactor



TMC Project in Spain
1850A Current Limiting Reactor



Job No.229306 KEPCO PJT in South Korea
170kV Current Limiting Reactor



Malaysia Project
300A Current Limiting Reactor

Cooperative Partner

After-sales Service

"Service first, customer supreme" is TEEE's principle of service. We serve customers from different application both across China and abroad.

Stick on the principle of responding to customers within 120 hours: the feedback information from the customers will be responded within 24 hours. Once there needs service on site, we will arrive within 72 hours (for domestic customers), and solve the problems within 24 hours after arrival(24+72+24=120).

Service Hotline
+86-22-28572596

info@tee.com.cn



Data Required for Quotation

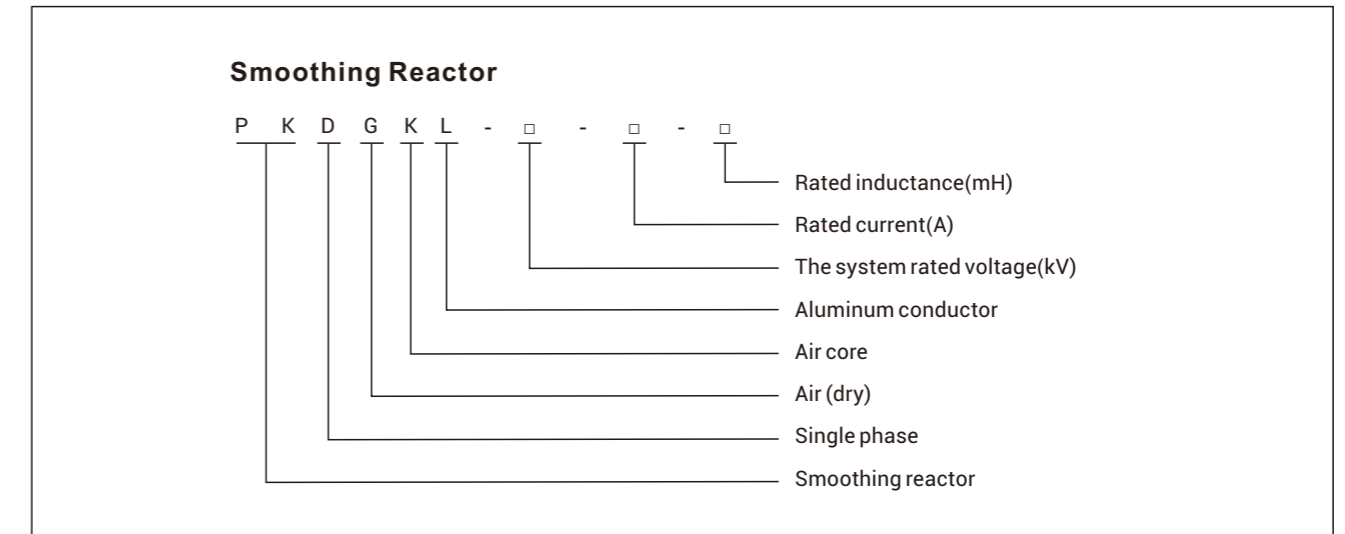
Note: Mandatory information is marked by a red asterisk (*).

Reactors	Line Traps
Customer Name*	Customer Name*
Shipping Address c/w Zip Code*	Shipping Address c/w Zip Code*
Quantity*	Quantity*
Rated Continuous Current (A) *	Rated Continuous Current (A)*
System Voltage (kV) *	System Voltage (kV)*
Rated Thermal Short-Time Current (kA/s) *	Rated Thermal Short-Time Current (kA/s)*
Rated Impedance or Inductance (ohms or mH) *	Rated Main Coil Inductance (mH)*
Power Frequency (Hz) *	Power Frequency (Hz)*
Applicable Standard *	Applicable Standard*
Application: Series or Shunt	Type of Tuning – Single or Double or Wideband*
Harmonic Currents (A/Hz)	Fixed or Adjustable Tuning Capability*
Maximum Continuous Overload Current (A)	Bandwidth Frequencies (Hz)*
Mechanical Short-Time Current (kA/peak)	Minimum Blocking Impedance/Resistance (ohms)*
Average Ambient Temperature (°F or °C)	Mounting – Vertical or Horizontal*
Maximum Ambient Temperature (°F or °C)	Average Ambient Temperature (°F or °C)
Site Altitude (ft or m)	Maximum Ambient Temperature (°F or °C)
Seismic Level (G)	Site Altitude (ft or m)
BIL Across Reactor (kV)	Seismic Level (G)
BIL Reactor to Ground (kV)	Special Environmental Considerations (if any)
Maximum Noise Level (dBA)	Special Technical Requirements (if any)
Special Environmental Considerations (if any)	
Special Technical Requirements (if any)	

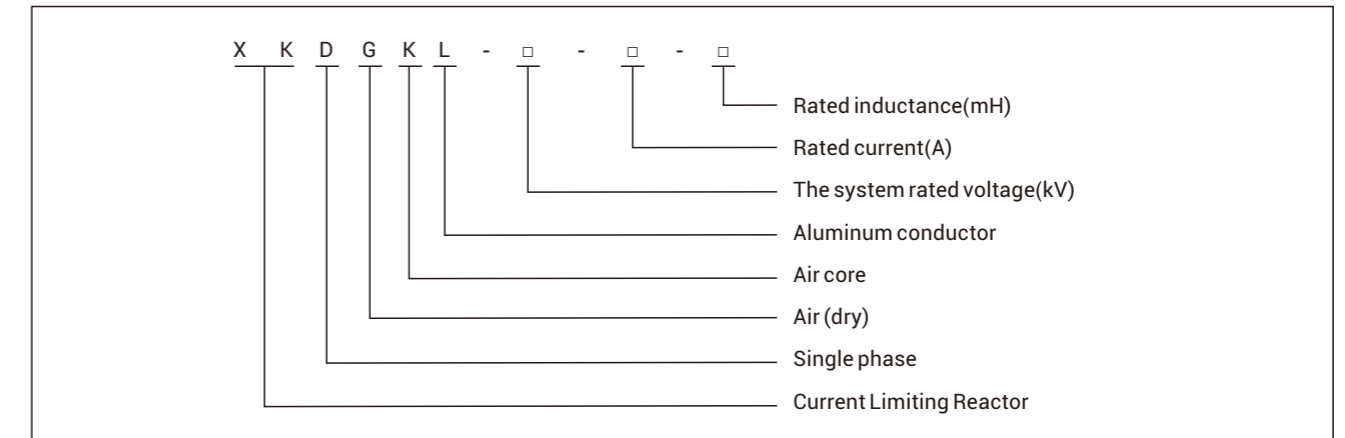
Reactor Code

- **Current Limiting Reactor:** XKDGL - system rated voltage - rated current - rated inductance
- **Smoothing Reactor:** PKDGL - system rated voltage - rated current - rated inductance
- **Shunt Reactor:** BKDGL - rated kVA / system rated voltage
- **Filter Reactor:** LKDGL - system rated voltage - rated current - rated inductance
- **Series Reactor:** CKDGL - rated kAVr / system rated voltage - reactive rate %
- **Test Reactor:** SKDGL - system rated voltage - working current - rated inductance
- **Neutral Ground Reactor:** JKDGL - system rated voltage - rated current - rated inductance
- **Line Trap:** XZF/XZK-rated current -rated inductance-short-time withstand current

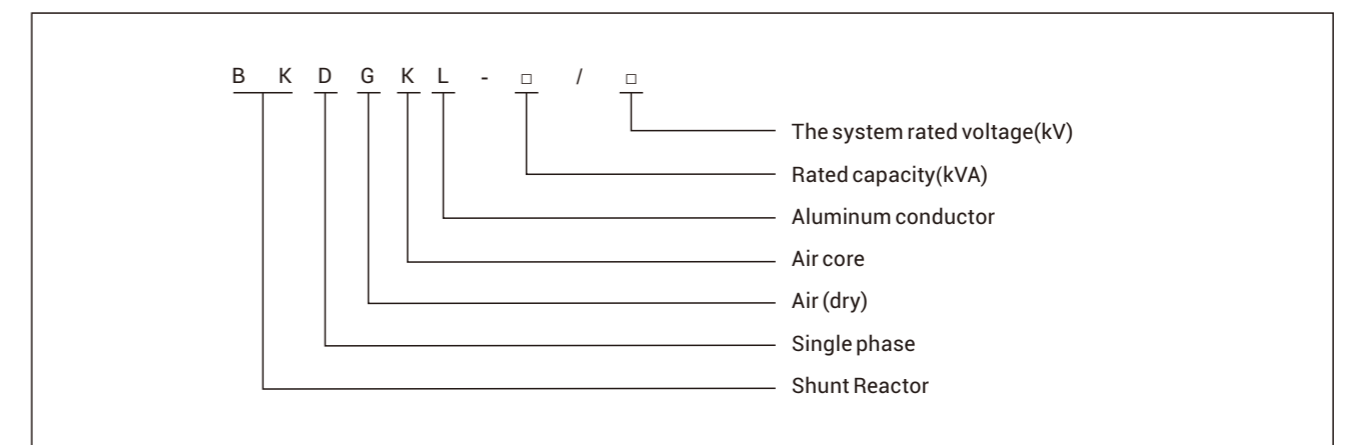
PK Series Dry-Type Air-Core Smoothing Reactor



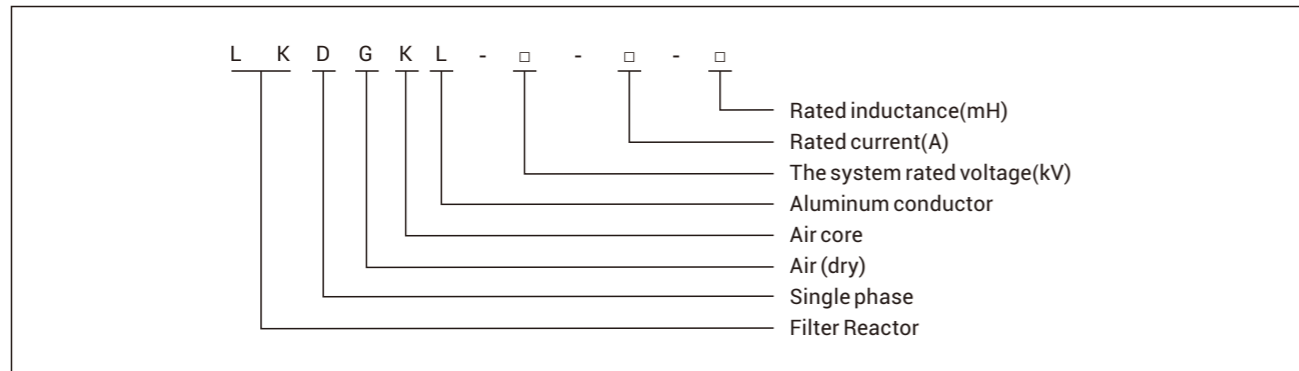
XK Current Limiting Reactor



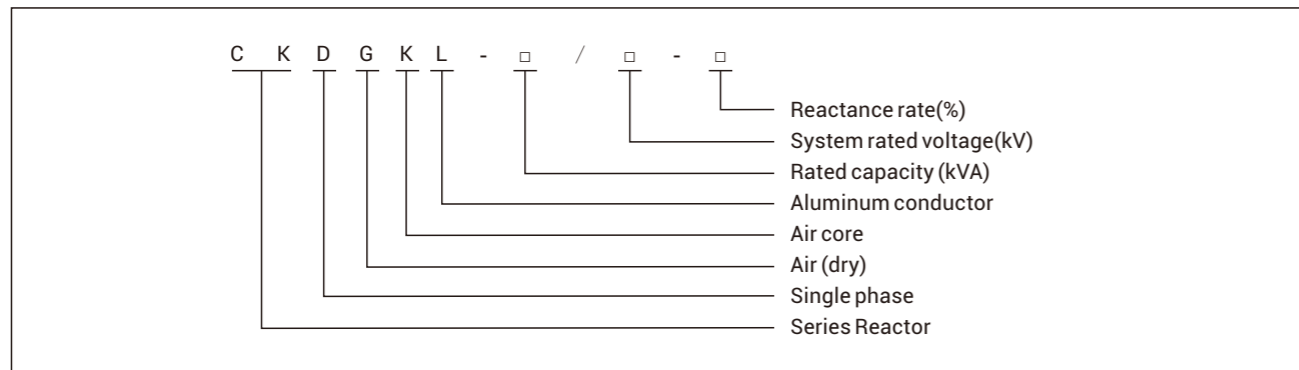
BK Shunt Reactor



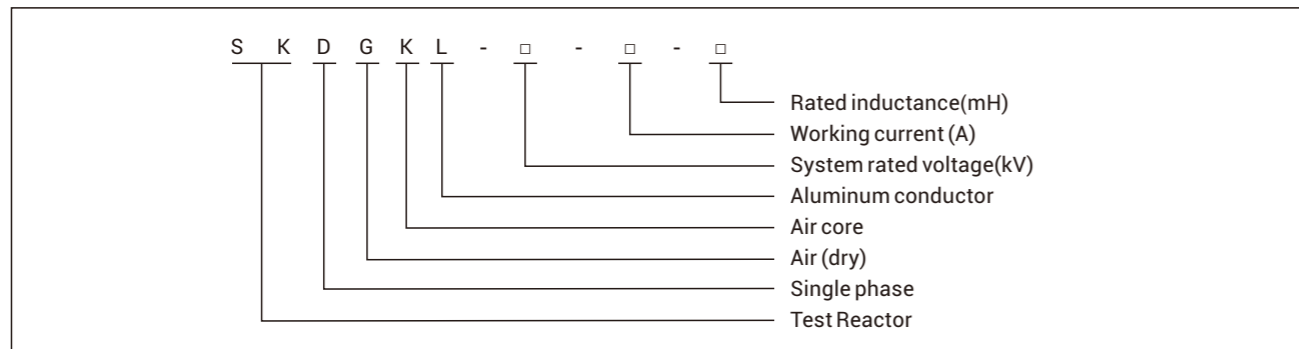
LK Filter Reactor



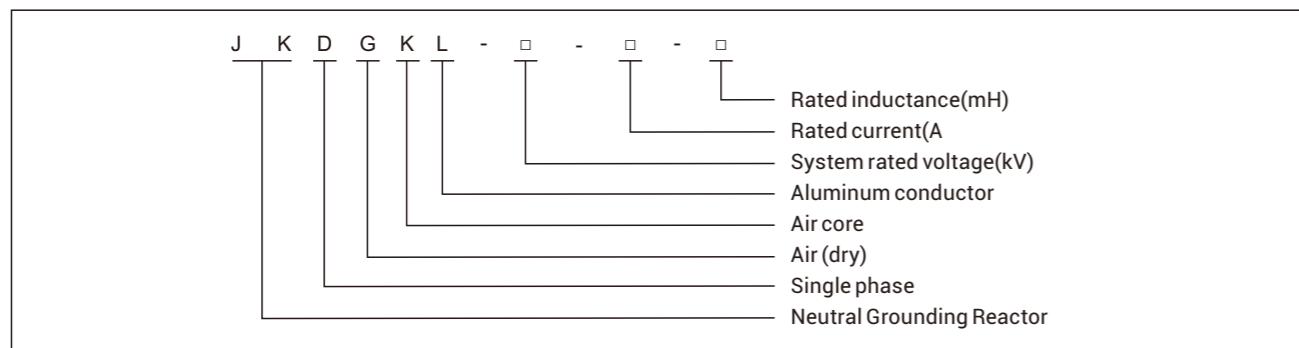
CK Series Reactor



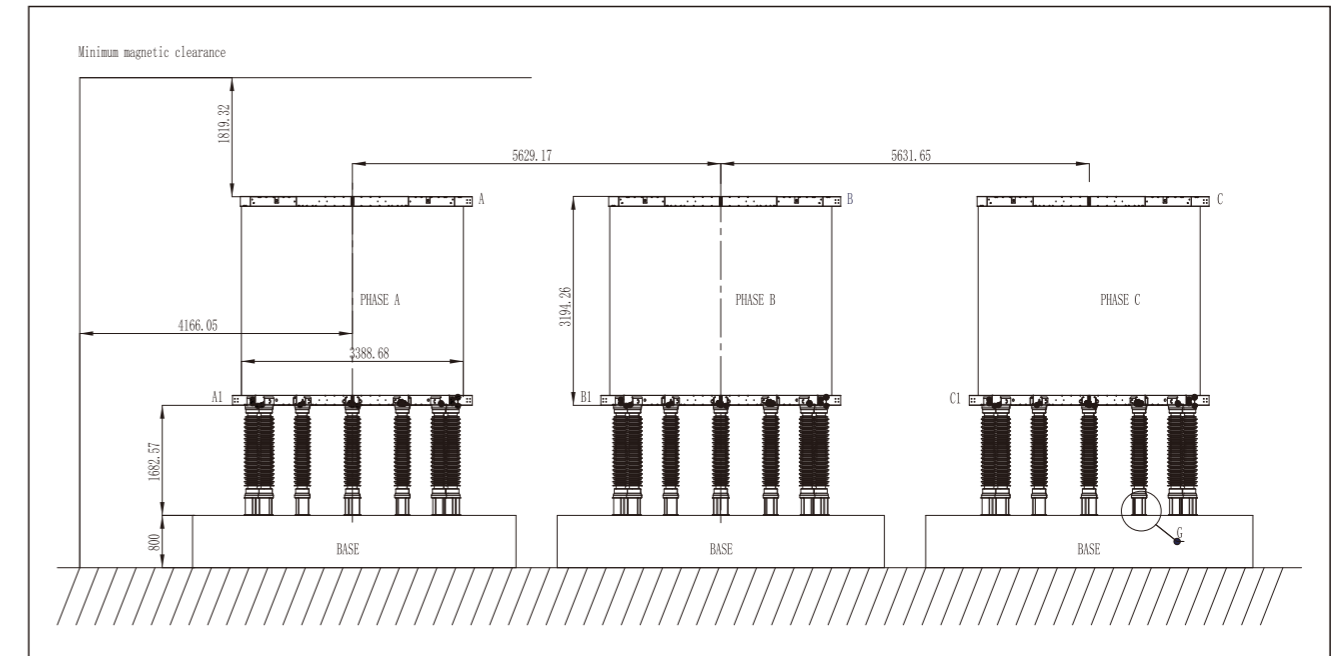
SK Test Reactor



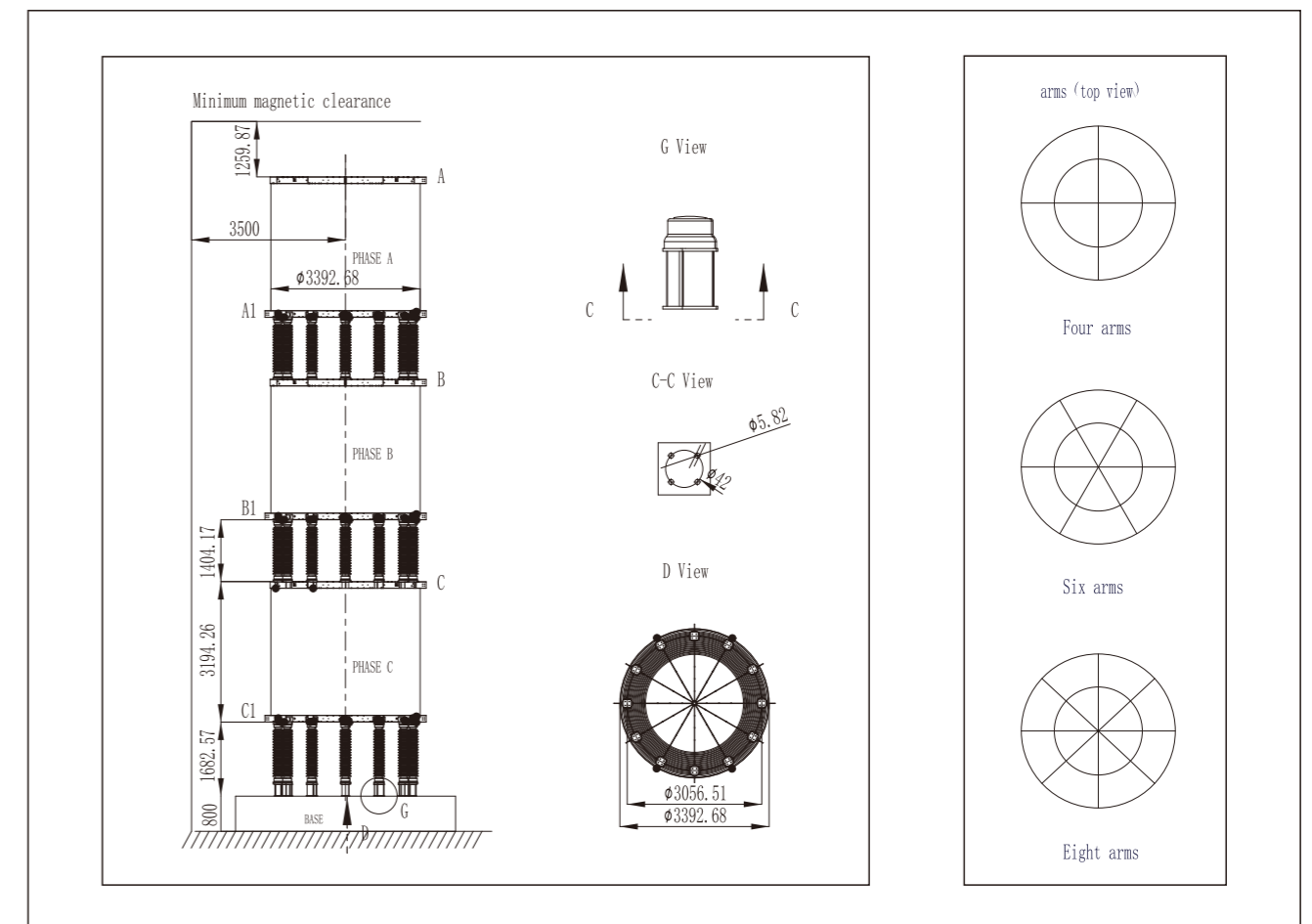
JK Neutral Grounding Reactor



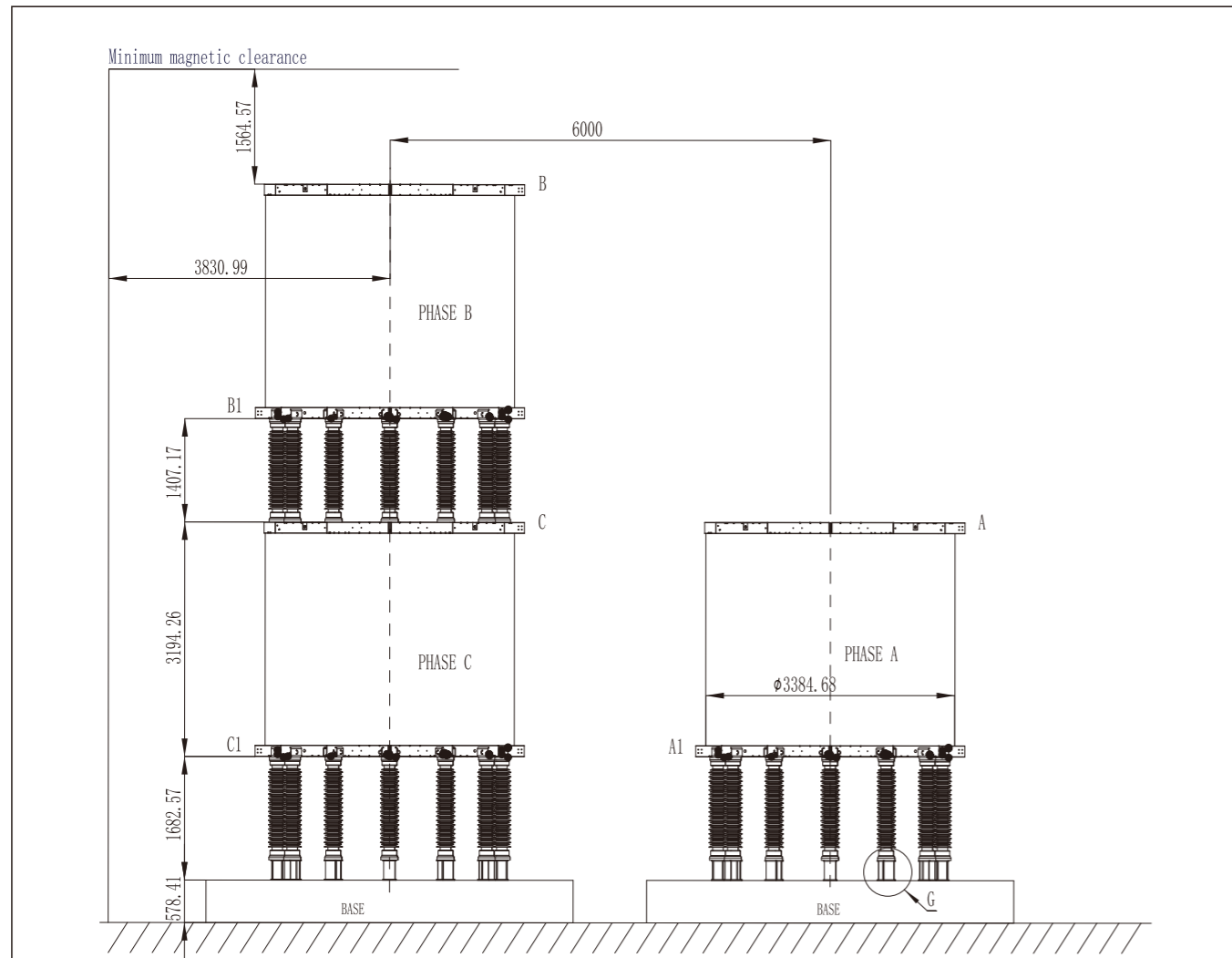
Three-Phase Side-by-Side Layout



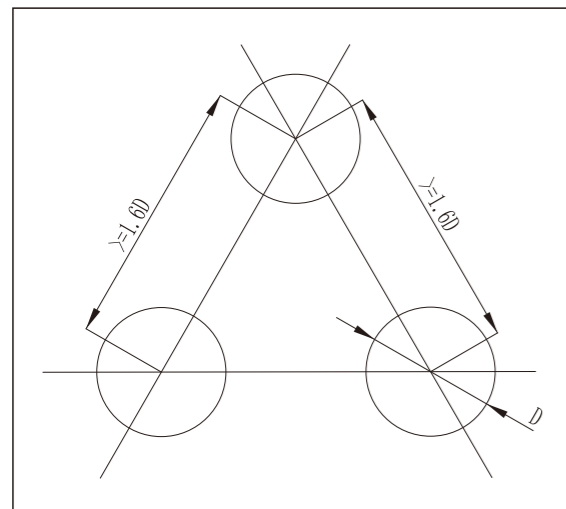
Three-Phase Stacked



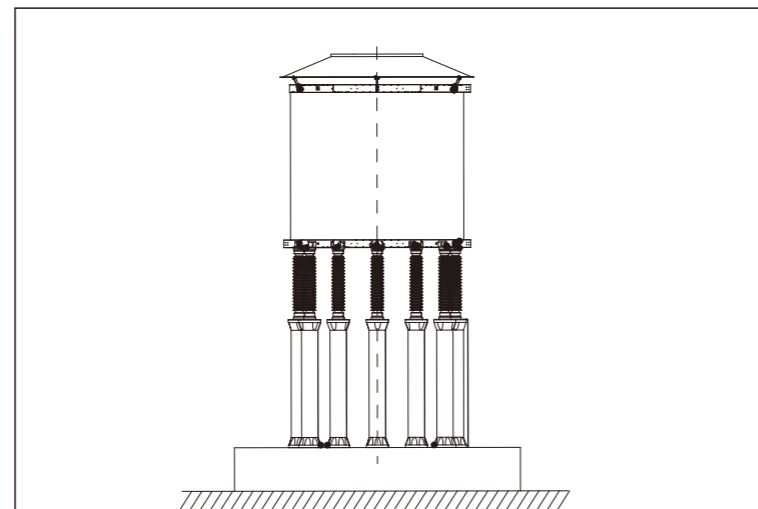
Two Phases Stacked and One Phase on the Ground



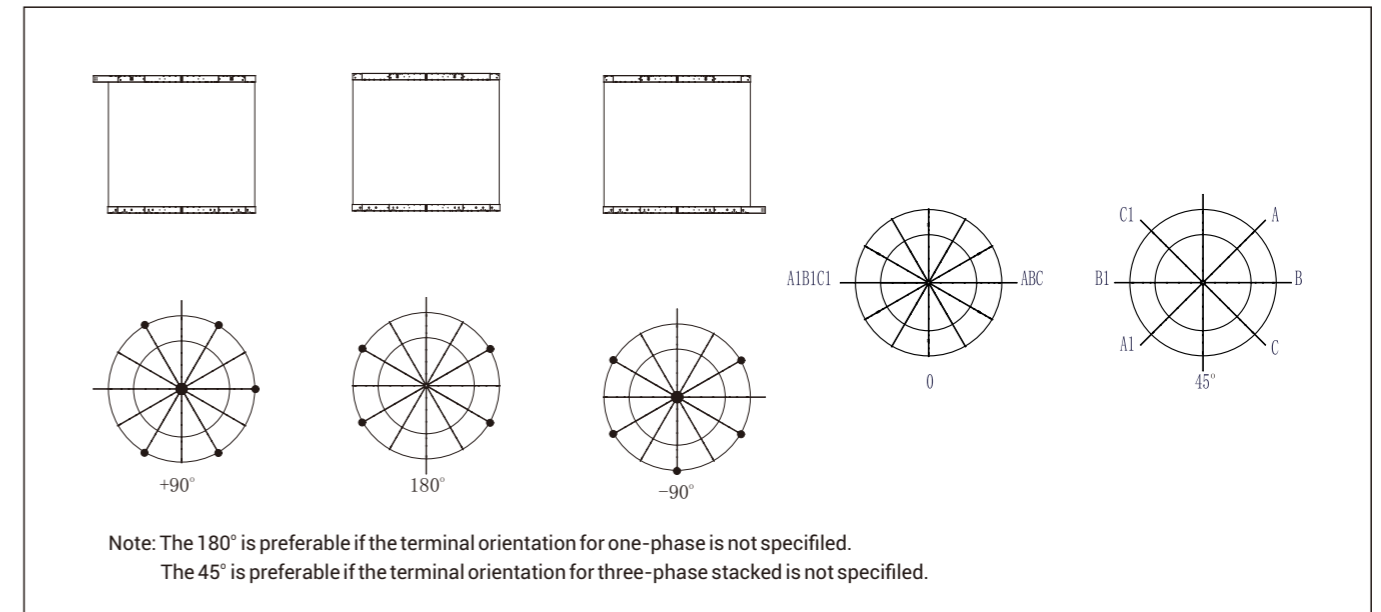
Three-Phase Δ Layout



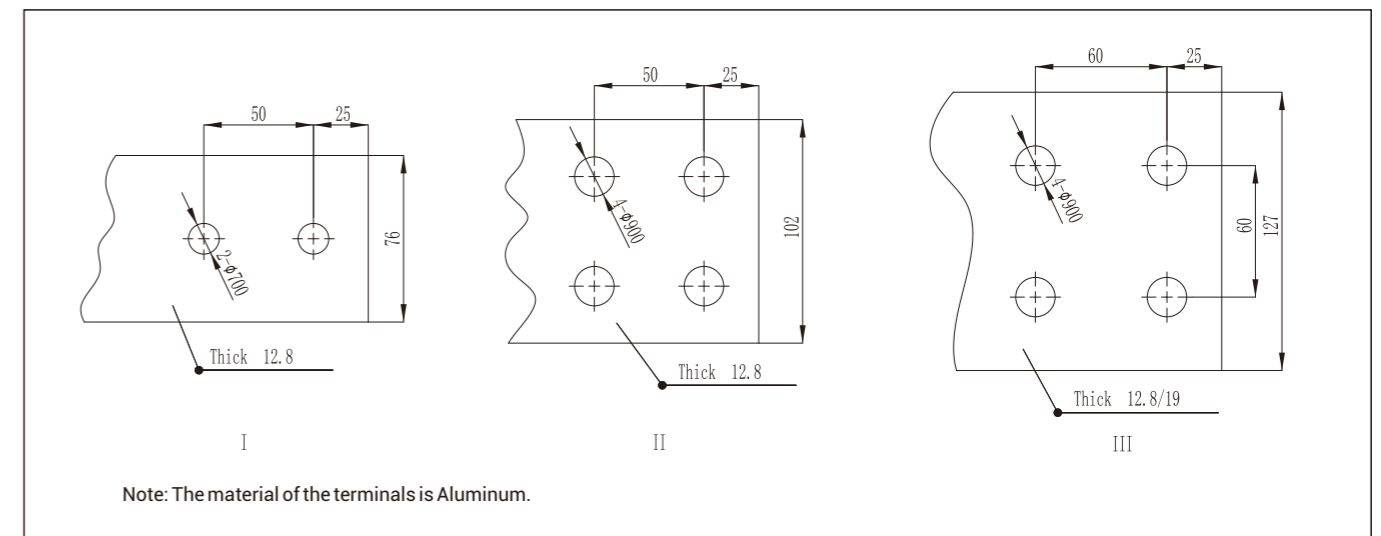
Outdoor Shunt Reactor Installation Drawing



Line Angle of Terminals



Terminal Shape and Size



Technical Parameters for Typical Reactors

PK Smoothing Reactor Series Table

Model	Equip-ment rated voltage (kV)	Highest voltage for equipment (kV)	Rated inductance (mH)	Rated DC current (A)	Maximum continuous DC (A)	Total harmonic current (A)	Loss (kW)	Transient fault current (kA)	Single pole coil lightning impulse voltage (kV)	Insulator lightning impulse voltage (kV)	Outer diameter (m)	Height (m)	Weight (kg)
PKDGKL-800-5000-50	800	816	50	5000.00	5046	309	345.10	40	2100	1950	4.71	4.09	65502
PKDGKL-800-5000-75	800	816	75	5000.00	5046	309	426.47	40	2100	1950	4.71	4.19	79750
PKDGKL-800-6250-50	800	816	50	6250.00	6296	386	431.09	40	2100	1950	5.22	4.35	94092
PKDGKL-800-6250-75	800	816	75	6250.00	6296	386	534.67	40	2100	1950	5.81	4.63	122535
PKDGKL-1100-5000-50	1100	1120	50	5000.00	5046	309	348.45	40	2600	2580	5.21	4.09	76072
PKDGKL-1100-5455-75	1100	1120	75	5455.00	5523	230	390.00	40	2600	2580	5.7	4.6	105000
PKDGKL-1100-6250-50	1100	1120	50	6250.00	6296	386	435.27	40	2600	2580	5.62	4.35	94910
PKDGKL-1100-6250-75	1100	1120	75	6250.00	6296	386	539.86	40	2600	2580	5.81	4.63	123601

XK High Voltage Current Limiting Reactor Series Table

Model	System rated voltage (kV)	Equip-ment rated voltage (kV)	Highest voltage for equipment (kV)	Rated inductance (mH)	Rated react-ance ()	Rated current (A)	Power Rating (kVAr)	Loss (kW)	Short circuit current/duration (kA/s)	Coil light-ning impulse voltage (kV)	Insulator light-ning impulse voltage (kV)	Outer diameter (m)	Height (m)	Weight (kg)
XKDGKL-500-3600-33.43	500	500	550	33.43	10.50	3600	136090	307.42	40/4	1550	1550	3.77	4.34	28434
XKDGKL-500-4000-33.43	500	500	550	33.43	10.50	4000	168012	346.41	40/4	1550	1550	3.95	4.30	32062
XKDGKL-500-2400-38.2	500	500	550	33.43	12.00	2400	69116	186.15	40/4	1550	1550	3.41	4.31	19611
XKDGKL-500-3000-38.2	500	500	550	38.20	12.00	3000	107994	266.07	40/4	1550	1550	3.69	4.30	24623
XKDGKL-500-3600-38.2	500	500	550	38.20	12.00	3600	155511	322.52	40/4	1550	1550	3.94	4.30	30590
XKDGKL-500-4000-3.82	500	500	550	38.20	12.00	4000	191989	365.66	40/4	1550	1550	4.12	4.31	34639
XKDGKL-500-2400-44.56	500	500	550	44.56	14.00	2400	80634	202.55	40/4	1550	1550	3.62	4.31	21232
XKDGKL-500-2800-44.56	500	500	550	44.56	14.00	2800	109752	239.95	40/4	1550	1550	7.76	4.34	25905
XKDGKL-500-3000-44.56	500	500	550	44.56	14.00	3000	125990	287.70	40/4	1550	1550	3.90	4.33	26984
XKDGKL-500-3600-44.56	500	500	550	44.56	14.00	3600	181426	343.49	40/4	1550	1550	4.16	4.30	34359
XKDGKL-500-4000-44.56	500	500	550	44.56	14.00	4000	223983	394.94	40/4	1550	1550	4.31	4.34	37926
XKDGKL-500-2400-57.3	500	500	550	57.30	18.00	2400	103688	223.06	40/4	1550	1550	3.96	4.32	27721
XKDGKL-500-3000-57.3	500	500	550	57.30	18.00	3000	162012	318.93	40/4	1550	1550	4.32	4.34	31688
XKDGKL-500-3600-57.3	500	500	550	57.30	18.00	3600	233297	390.68	40/4	1550	1550	4.58	4.34	39188
XKDGKL-500-4000-57.3	500	500	550	57.30	18.00	4000	288021	444.09	40/4	1550	1550	4.74	4.34	44030
XKDGKL-500-2400-66.85	500	500	550	66.85	21.00	2400	120969	240.12	40/4	1550	1550	4.27	4.33	28203
XKDGKL-500-3000-66.85	500	500	550	66.85	21.00	3000	189014	335.88	40/4	1550	1550	4.54	4.34	35169

XK Current Limiting Reactor Series Table

Model	System rated voltage (kV)	Equip-ment rated voltage (kV)	Highest voltage (kV)	Rated inductance (mH)	Rated react-ance ()	Rated current (A)	Power Rating (kVAr)	Loss (kW)	Short circuit current/duration (kA/s)	Coil light-ning impulse voltage (kV)	Insulator light-ning impulse voltage (kV)	Outer diameter (m)	Height (m)	Weight (kg)
XKDGKL-10-2000-0.73	10	10.5	12	0.73	0.23	2000	920	11.77	3.6/2	85	85	2.22	0.58	951
XKDGKL-10-2500-0.59	10	10.5	12	0.59	0.18	2500	1155	11.87	75/4	85	85	1.93	0.59	966
XKDGKL-10-2000-0.92	10	10.5	12	0.92	0.29	2000	1155	13.5	30/2	85	85	2.23	0.83	933
XKDGKL-10-3000-0.49	10	10.5	12	0.49	0.15	3000	1380	15.21	50/2	85	85	2.11	0.8	1063
XKDGKL-10-2500-0.73	10	10.5	12	0.73	0.23	2500	1439	12.77	75/2	85	85	1.8	1.06	1510
XKDGKL-10-3000-0.61	10	10.5	12	0.61	0.19	3000	1733	17.3	50/2	85	85	2.12	0.78	1247
XKDGKL-10-4000-0.37	10	10.5	12	0.37	0.12	4000	1850	18.19	75/2	85	85	2.43	0.79	1711
XKDGKL-10-3000-0.74	10	10.5	12	0.74	0.23	3000	2081	17.46	50/2	85	85	2.41	0.74	1442
XKDGKL-10-4000-0.46	10	10.5	12	0.46	0.14	4000	2307	18.78	10/2	85	85	2.57	0.86	2239
XKDGKL-10-4000-0.55	10	10.5	12	0.55	0.17	4000	2770	25.88	75/2	85	85	2.49	0.62	1523
XKDGKL-10-3000-1.02	10	10.5	12	1.02	0.32	3000	2881	19.95	75/4	85	85	2.37	0.7	1669
XKDGKL-35-2000-0.32	35	35	40.5	0.32	0.1	2000	400	5.92	75/4	226	226	1.17	0.84	584
XKDGKL-35-1500-2.14	35	35	40.5	2.14	0.67	1500	1516	16.19	37.5/2	226	226	1.73	1.17	1387

BK Shunt Reactor Series Table

Model	System rated voltage (kV)	Equip-ment rated voltage (kV)	Max voltage (kV)	Rated inductance (mH)	Rated react-ance ()	Rated current (A)	Power Rating (kVAr)	Loss (kW)	Coil light-ning impulse voltage (kV)	Insulator light-ning impulse voltage (kV)	Outer diameter (m)	Height (m)	Weight (kg)
BKDGKL-5000/35	35	35	40.5	260	81.68	247.4	4999	15.15	226	226	3.4	2.4	6973
BKDGKL-10000/35	35	35	40.5	129.87	40.8	494.9	9993	39.81	226	226	2.72	1.99	4550
BKDGKL-15000/35	35	35	40.5	77.03	24.2	787.3	15000	51.11	226	226	3.75	2.46	6638
BKDGKL-20000/35	35	35	40.5	65	20.42	990	20014	59.07	226	226	3.42	2.02	6775
BKDGKL-21000/35	35	35	40.5	65	20.42	1004	20584	54.75	226	226	3.24	2.74	11326
BKDGKL-15000/66	66	66	72.5	280.75	88.2	412.4	15001	45.18	367	367	3.08	3.47	9067
BKDGKL-20000/66	66	66	72.5	231	72.57	525	20002	60	367	367	3.79	3.48	9561
BKDGKL-30000/66	66	66	72.5	140.38	44.1	825	30016	81.06	367	367	2.94	3.46	13939
BKDGKL-40000/66	66	66	72.5	105.3	33.08	1100	40028	79.5	367	367	3.51	3.39	14900
BKDGKL-40000/110	110	110	126	73	22.93	1320	39960	97.07	509	509	3.42	3	14389

CK Series Reactor Series Table

Model	System rated voltage (kV)	Equipment rated voltage (kV)	Max voltage (kV)	Rated inductance (mH)	Rated current (A)	Power Rating (kVAr)	Loss (kW)	Short circuit current/duration (kA/s)	Coil lightning impulse voltage (kV)	Insulator lightning impulse voltage (kV)	Outer diameter (m)	Height (m)	Weight (kg)
CKDGKL-40/35-5	35	35	40.5	96.29	36.36	40	1.38	0.73	226	226	1.3	2.79	630.13
CKDGKL-50/35-5	35	35	40.5	77.03	45.45	50	1.725	0.91	226	226	1.08	0.89	239.87
CKDGKL-67/35-5	35	35	40.5	57.49	60.91	67	2.312	1.22	226	226	1.02	0.85	237.34
CKDGKL-79/35-5	35	35	40.5	48.75	71.82	79	2.73	1.44	226	226	0.97	0.84	227.55
CKDGKL-80/35-5	35	35	40.5	48.14	72.73	80	2.76	1.45	226	226	1.06	0.92	273
CKDGKL-83/35-5	35	35	40.5	46.40	75.45	83	2.864	1.51	226	226	1.08	0.9	280
CKDGKL-100/35-5	35	35	40.5	38.52	90.91	100	2.76	1.82	226	226	1.173	0.842	316
CKDGKL-120/35-5	35	35	40.5	32.10	109.09	120	3.312	2.18	226	226	0.94	0.92	282.19
CKDGKL-140/35-5	35	35	40.5	27.51	127.27	140	3.864	2.55	226	226	0.94	0.84	290.13
CKDGKL-160/35-5	35	35	40.5	24.07	145.45	160	4.416	2.91	226	226	0.95	0.85	318.57
CKDGKL-167/35-5	35	35	40.5	23.06	151.82	167	4.61	3.04	226	226	1.04	0.75	372
CKDGKL-192/35-5	35	35	40.5	20.06	174.55	192	5.3	3.49	226	226	1.29	1.27	429.34
CKDGKL-200/35-5	35	35	40.5	19.26	181.82	200	5.52	3.64	226	226	1.18	0.774	437
CKDGKL-240/35-5	35	35	40.5	16.05	218.18	240	6.624	4.36	226	226	1.47	0.86	598
CKDGKL-250/35-5	35	35	40.5	15.41	227.27	250	6.900	4.55	226	226	1.28	0.88	438
CKDGKL-288/35-12	35	35	40.5	91.67	100.00	288	7.949	0.83	226	226	1.3	0.99	460.31
CKDGKL-300/35-12	35	35	40.5	88.01	104.17	300	8.280	0.87	226	226	1.23	0.85	437.32
CKDGKL-333/35-12	35	35	40.5	79.28	115.63	333	7.659	0.96	226	226	1.27	0.85	475.84
CKDGKL-336/35-12	35	35	40.5	78.58	116.67	336	7.728	0.97	226	226	1.3	1.01	507.23
CKDGKL-384/35-12	35	35	40.5	68.75	133.33	384	8.832	1.11	226	226	1.3	0.94	523.05
CKDGKL-400/35-12	35	35	40.5	66.00	138.89	400	9.200	1.16	226	226	1.2	1.18	625
CKDGKL-417/35-12	35	35	40.5	63.31	144.79	417	9.591	1.21	226	226	1.24	0.84	535.85
CKDGKL-480/35-12	35	35	40.5	55.00	166.67	480	11.040	1.39	226	226	1.41	1.02	724
CKDGKL-500/35-12	35	35	40.5	52.80	173.61	500	11.500	1.45	226	226	1.45	0.85	592.53
CKDGKL-576/35-12	35	35	40.5	45.84	200.00	576	10.598	1.67	226	226	1.4	1.23	703.39
CKDGKL-600/35-12	35	35	40.5	44.00	208.33	600	11.040	1.74	226	226	1.5	0.94	796
CKDGKL-667/35-12	35	35	40.5	39.58	231.60	667	12.273	1.93	226	226	1.5	0.96	721.35
CKDGKL-720/35-12	35	35	40.5	36.67	250.00	720	13.248	2.08	226	226	1.4	1.18	792.34
CKDGKL-800/35-12	35	35	40.5	33.00	277.78	800	14.720	2.31	226	226	1.78	1.4	979

CK Series Reactor Series Table

Model	System rated voltage (kV)	Equipment rated voltage (kV)	Max voltage (kV)	Rated inductance (mH)	Rated current (A)	Power Rating (kVAr)	Loss (kW)	Short circuit current/duration (kA/s)	Coil lightning impulse voltage (kV)	Insulator lightning impulse voltage (kV)	Outer diameter (m)	Height (m)	Weight (kg)
CKDGKL-960/35-12	35	35	40.5	27.50	333.33	960	17.664	2.78	226	226	1.4	1.16	918.7
CKDGKL-1000/35-12	35	35	40.5	26.40	347.22	1000	18.400	2.89	226	226	1.69	0.92	865.43
CKDGKL-1200/35-12	35	35	40.5	22.00	416.67	1200	16.560	3.47	226	226	1.65	1.25	1260
CKDGKL-1600/35-12	35	35	40.5	16.50	555.56	1600	22.080	4.63	226	226	1.84	1.4	1350
CKDGKL-2400/35-12	35	35	40.5	11.00	833.33	2400	33.120	6.94	226	226	2.02	1.03	1760
CKDGKL-167/66-5	66	66	72.5	84.06	79.52	167	4.609	1.59	368	368	2.22	1.69	886
CKDGKL-300/66-5	66	66	72.5	46.79	142.86	300	8.280	2.86	368	368	1.4	1.83	625.6
CKDGKL-333/66-5	66	66	72.5	42.15	158.57	333	7.659	3.17	368	368	1.17	1.11	714
CKDGKL-400/66-5	66	66	72.5	35.09	190.48	400	9.200	3.81	368	368	1.83	1.43	791
CKDGKL-500/66-5	66	66	72.5	28.07	238.10	500	11.500	4.76	368	368	1.22	1.23	675.83
CKDGKL-667/66-5	66	66	72.5	21.05	317.62	667	12.273	6.35	368	368	1.2	1.23	798.26
CKDGKL-720/66-12	66	66	72.5	134.71	130.43	720	13.248	1.09	368	368	1.6	1.96	999.14
CKDGKL-800/66-12	66	66	72.5	121.24	144.93	800	14.720	1.21	368	368	1.81	1.37	1069
CKDGKL-1000/66-12	66	66	72.5	96.99	181.16	1000	18.400	1.51	368	368	2.69	2.22	1344
CKDGKL-1200/66-12	66	66	72.5	80.83	217.39	1200	16.560	1.81	368	368	1.32	1.23	1111.35
CKDGKL-1600/66-12	66	66	72.5	60.62	289.86	1600	22.080	2.42	368	368	1.29	1.25	1160.8
CKDGKL-2400/66-12	66	66	72.5	40.41	434.78	2400	33.120	3.62	368	368	2.64	2.32	2378

Technical Parameters for Line Traps

Type	Rated current (A)	Rated inductance (mH)	Short time current			Outer diameter (mm)	Height (mm)	Weight (kg)
			Thermally (kA)	Time (s)	Dynamic (kA)			
XZF-2500-0.2/40-J1	2500A	0.2mH	40kA	1	102kA	1160	1096	720
XZF-2500-0.5/40-J1	2500A	0.5mH	40kA	1	102kA	1530	1221	1150
XZF-2500-0.2/50-J1	2500A	0.2mH	50kA	1	127.5kA	1160	1096	720
XZF-4000-0.5/50-J1	4000A	0.5mH	50kA	1	127.5kA	1860	1493	2300
XZF-2500-0.5/50-J1	2500A	0.5mH	50kA	1	127.5kA	1530	1221	1150
XZF-2500-1.2/50-J1	2500A	1.2mH	50kA	1	127.5kA	1700	1571	1830
XZF-3150-0.5/50-J1	3150A	0.5mH	50kA	1	127.5kA	1760	1383	1660
XZF-3150-1.2/50-J1	3150A	1.2mH	50kA	1	127.5kA	1820	1883	2590
XZF-3150-0.5/63-J1	3150A	0.5mH	63kA	1	160.65kA	1760	1383	1660
XZF-3150-1.2/63-J1	3150A	1.2mH	63kA	1	160.65kA	1820	1883	2590
XZF-4000-0.5/63-J1	4000A	0.5mH	63kA	1	160.65kA	1860	1493	2300
XZF-5000-0.5/50-J1	5000A	0.5mH	50kA	1	127.5kA	1960	1563	3010
XZF-5000-1.2/50-J1	5000A	1.2mH	50kA	1	127.5kA	2330	1968	4980