SANHE POWER TECH

Medium voltage power quality solution(1–35kV)

Power factor correction/harmonic filtering

BROCHURE



Automatic/local/centralization capacitor bank
For cement/metallurgy/water/power grid/new energy
Oil/car/mining/factory etc

Project

Since 2002, Sanhe established the international business.We cooperated with Korea Samwha, ABB, Schneider,Siemens etc . Under the policy of “One belt,one road” , we are confident to supply our foreign customers with good for value products and sustainable service. The following is some of oversea project for your reference.

Oil pipeline



Egypt Oil refinery project
Kazakhstan ATYRAU oil refinery project
Turkmenistan South Yolotan oil&gas field
PetroChina Kazakhstan Zanazor Oilfield Processing Plant Phase I Project
Kenya crude oil pipeline project
Russia 12000 air separation
Kazakhstan Cryogenic Nitrogen Plant Project
PetroChina (Turkmenistan)pipeline around Amu Darya River

Metallurgy



Congo–kinshasa KOLWEZT copper ore 5000t mining project
Pakistan Duddar Lead–Zinc Mine
Malaysia Steelmaking and Ironmaking Section Comprehensive Steel Plant

Cement



F175A–BULK CEMENT FACILITEBATURAJA,PALEMBANG &PANJANG PLANT PROJECT
F203–PAKISTAN CHERAT CLINKER PRODUCTION LINEPROJECT(6700T/D)
Oman SCF240TPH cement grinding project
Algeria BC 2×6000 tons cement production line project
Paraguay cement production line F190A
South Africa PPC Slurry SK9 3000TPD
Angola NC5000TPD cement production project
Malaysia HUME Cement
Zimbabwe MSASA100tph cement grinding line
European cement 10,000 tons line project
Nigeria SOKOTO project
Indonesia Pan Asia Group 5000td cement production line
Cambodia Cement Project
Laos Cement Industry Co., Ltd. 2500t/d production line project
Krittaphong Group Co., Ltd project
F153–Indonesia BANYUWANGI cement grinding line
Indonesia Maros Cement Grinding Station F152 Project
Tajikistan Huaxin Cement Co., Ltd. 3000T/D clinker cement production line

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Water treatment



Cameroon Sanaga Drinking Water Treatment Plant in Yaound é project
Bangladesh Chittagong Kanapuri River Water Supply Project
Angola Waterworks Water Supply System Reconstruction Project
Ghana Kaipeng Water Supply Expansion Project

Others



Intel Dalian project
UAE slag mill electrical device
Myanmar Yeni Paper Mill
Angola Dongdo and Ndalatando Power Grid Reconstruction Project
Kazakhstan Atirau refinery Co., Ltd. Aromatics Production Combined Plant
Saudi Basic Industries (SABIC)
Thailand Junan Clean Heat Recovery Coke Oven Project
Indonesia Djambi Factory power station expansion project
Germany ECOM
Germany Exyte M+W project
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SVG/APF Project

(New energy/Water/Metro/Commercial building/hospital etc.)

Indonesia Pan Asia Group 5000td total cement clinker production line
New Zealand injection plant
SICOMINES Copper–cobalt Phase 1
Congo SICOMINES Copper–cobalt Phase 1
Meat processing project
Australian Variable Frequency Device project
Canada rubber factory project
Wanma Electrical vehecal charger station SVG project
Shenzhen Unicom IDC room project
Nanjing Metro Project
Danyang City Waterworks treatment
Hunan Huaqiao sewage treatment plant expansion project
Hechuang deep processing of coal methanol plant project
Yanshan Petrochemical waste project
Lanzhou Zhongchuan Railway Station project
Northern region of urban and rural water supply project
Jiangsu Siyang sewage treatment project
Beijing Gaoantun circular economy charging station
Jingyuan hospital project
Jiangxi Security Command Center projects
Isle sewage treatment plant expansion renovation project

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Ordering instruction

If you have technical solution,you can check the following model list to choose suitable solution.

Model	Name	Location/field	Feature	Advantage	Wire connection/ theory	Solution
HVC	Medium voltage local reactive power compensator	installed around the loads to correct power factor and reduce line loss	less components	target compensation, The more loads, the more compensator. Such,the cost is highest	three phase capacitor , single phase capacitor	1. non-load current formula, 2.target power factor formula
HVCS	Medium voltage centralization reactive power compensator	Installed in the bus bar line to correct the whole distribution line power factor	more components, reactor can detune some times of harmonics	wholly compensation in the wiring coming point for less changeable loads, the cost is lower	single star (open triangle voltage protection) 、double star (unbalance voltage protection) 、several series connection (Differential voltage protection)	target power factor formula
HVCA	Medium voltage automatic reactive power compensator	Installed around the distribution room which has big range of load	most components, reactor can detune some times of harmonics, automatically switch on/off capacitors	wholly compensation in the wires coming point for more changeable loads, the cost is highersingle star (open triangle voltage protection)	single star (open triangle voltage protection)	target power factor formula
HVPF	Medium voltage Passive Harmonic Filter	Installed in the application of high harmonics in the power grid	high cost	harmonic filtering mainly, then reactive power compensation.	passive filter and compensation	filtering certain harmonics by simulation
HSVG	Medium voltage static var generator	suitable for 35 kv and below voltage level of the power supply network	high cost	Stepless and accurate compensation	instantaneous reactive power theory,PWM	filtering high harmonics and target power factor
HVCT	Medium voltage reactive power static var compensation (thyristor switch capacitor type)	suitable for 35 kv and below voltage level of the power supply network	high cost	zero-pass switch for multi-level capacitor bank with non-contact, no inrush, no switching transition and rapid change of its reactive power output	typical flexible AC power transmission, instantaneous reactive power theory , small waveform analysis etc	target power factor formula
HTCR	Medium voltage reactive power static var compensation (thyristor switch reactor type)	suitable for 35 kv and below voltage level of the power supply network	high cost	zero-pass switch for multi-level capacitor bank with non-contact, no inrush, no switching transition and rapid change of its reactive power output	typical flexible AC power transmission, Steinmetz, instantaneous reactive power theory	target power factor formula

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If you need our technical guide,please advise your problem details as much as you can,we can give more reasonable solution.

- You may provide following drawings or report
- Single line drawing
- Panel primary scheme drawing
- Power quality test report(mainly about harmonics)

If you have not any drawings, you can advise us

- Load name plate,load working condition, exsiting power factor, target power factor, harmonic times etc
- Or Rated voltage,compensation capacity, harmonic times(reactor detuning factor), other components

If you can not provide enough information

- We can supply your products according to your technical requirement.
- We can go to your project site, and give a professional test report after test.

Technical service

- Project–site power quality test (or test report from customer)
- Improvement solution and budget
- Product solution and price
- Products supply
- Product commissioning

Compensation Effect

- Harmonic filtering meets standard
- Power factor is over 0.95,electrical bill saving
- Low reactive power penalty killing
- Reducing the loss of transformer and line
- Improving the distribution ability, prolong the lifespan of electrical equipment

Conform IEC standards

IEC60871–1 : 2005
IEC60071–1 : 2006
IEC60529 : 2001
IEC62271–1 : 2007
IEC60871–4 : 1996
IEC60060–1 : 2006
…

Usage Condition:

Ambient Temp.	-25℃–+40℃
Humidity	≤95%
Aptitude	≤1000m(customization acceptable)
Max.Operating Voltage	≤110%(nominal voltage)
Max. Current	≤130%(nominal current)
Environment Around	No corrosive gas,no conductive dust and no explosive and flammable medium around
Installation Site	No severe vibration and bumps , installation angle ≤5°

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Application

Electric power system

Power plant

Transmission line

Substation

Terminal power supply (distribution, charging station)

Industrial system

Petrochemical Industry: oil field, refinery, oil transportation, and oil storage

Building materials: cement and other building materials production line

Metallurgical: Steel / intermediate frequency heating industry production line

Precision electronic: semiconductor_etc

Communication: communication production line

Textile: chemical fiber, rubber and other production line

Automotive industry

Mining industry

Paper industry

Printing industry

Tobacco industry

Food and pharmacy

Business system

Medical examination: nuclear magnetic resonance equipment, accelerator, CT, X ray and other testing sites

Bank data: Data Center, machine room, etc.

Telecom Data: IDC data and communication equipment room etc.

Municipal system: power supply (sewage)

Commercial buildings: power supply system (elevator)

Entertainment industry: power supply system

Transporation system

Air airport navigation: power supply system

Port logistics: warehousing, logistics and other power supply system

Railway: Subway, high-speed Rail, tunnel power supply system

Panel factory (power equipment manufacturers or contractors)

Panel factory

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HVCS medium voltage collective power factor compensation installation



It is installed in the 6–35kV busbar of total voltage reduction substation of the company or other place, its main functions include compensating for reactive power, enhancing power factor, regulating power network voltage, reducing cable power consumption, improving the quality of power supply and enhancing the efficiency of power distribution devices.

It is popularly used in the fields of metallurgy, mining, building material, oil, chemical industry, public utility project etc.

Main Characteristics

- Neutral unbalanced current protection split triangular voltage protection and voltage differential protection.
- With advantages of medium reliability, long life, low consumption, low temperature rise, low impedance ratio etc.
- With power discharging units, the residual voltage decreases to less than 50V when the devices cut off from network within 5 minutes.
- With medium voltage display device, magnetic lock and watch window.
- Force locking function ensures the operators safe.
- Cabinet and rack type for your choose (accept customization).
- Suitable reactor to suppress medium times harmonic or closing inrush current.
- With sensor and isolated converter to monitor capacitors working temperature, displaying its parameters.
- By connecting RS485 port with the computer, it can be remote controlled.
- Single star or double star wires connnection solution.

Usage Condition

Ambient Temp.	-25℃-+40℃
Humidity	≤95%
Aptitude	≤1000m(customization acceptable)
Max.Operating Voltage	≤110%(nominal voltage)
Max. Current	≤130%(nominal current)
Environment Around	No corrosive gas,no conductive dust and no explosive and flammable medium around
Installation Site	No severe vibration and bumps , installation angle ≤5°
Power Supply	No strong harmonic

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HVCA medium voltage reactive power automatic compensation installation

It is widely used in power system, industrial and mining enterprises distribution network. In order to improve power factor, reduce line loss, and improve voltage quality of system, it achieves the synthetically automatic control of reactive power and voltage by setting capacitor group mode, automatically switching compensation capacitor and regulating on–load tap changing transformer according to the demand of reactive power.



La série HVCA de dispositifs de compensation automatique de puissance réactive à haute tension (MSC) en utilisant le contrôleur de facteur de puissance pour vérifier automatiquement la puissance active et réactive du système de détection en temps réel, puis définir les paramètres par rapport à choisir le meilleur programme pour contrôler la commutation du condensateur de commutation mécanique, résoudre le problème que le condensateur de shunt ne peut que fixer la capacité de sortie et ne peut pas suivre et compenser la charge fluctuante.

Main Characteristics

- With power factor controller to realize automatically switch on/off
- Effectively suppress switching inrush and medium harmonic.
- Vacuum contactor for frequently switching, no resignation, no bouncing.
- Protection of the overvoltage, under voltage, over current, instantaneous current, open delta voltage and fault locking. Force locking function to keep the operator safe.
- Composed of incoming line isolation cabinet and several auto–switching compensation cabinets.

Technical Parameters

- Rated voltage: 1–35kv;
- Rated frequency: 50 HZ/60HZ;
- Rated capacity: 300 ~ 12000 kvar;
- Compensation accuracy: cos ϕ ≥0.98;

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HVC medium voltage reactive power local compensation installation



It is widely used in the medium power and medium voltage electric equipments of metallurgy, mining, petrochemical Industry, drainage and other fields. Particularly, it can work well in compensating long-distance wire loss, improving power factor, reducing line loss, saving energy, keeping voltage steady and improving the quality of power grid etc.

It is mainly composed of shunt capacitors, and equipped with protection units, which is connected with three phase AC power distribution system of 50 or 60Hz and rated voltage 3-10KV and installed around the a synchronized generator or inductive equipments.

La série HVC de dispositifs de compensation de puissance réactive à haute tension in situ dont des condensateurs en parallèle comme le corps principal, et équipé de dispositifs de protection et autres dispositifs de compensation réactive in situ, généralement connectés en parallèle à une fréquence de 50 ou 60Hz, la tension nominale de 3 ~ 10kV du Système de distribution de courant alternatif triphasé, installé au voisinage d'un moteur asynchrone ou d'un équipement électrique inductif pour faciliter compenser in situ.

Working principle

Inductive load always have certain resistance (such as motor coil of DC resistance, etc), and therefore equivalent to inductance L and resistance R series circuit. The capacitor is in parallel on inductive load L, which can compensate reactive power, improve power factor. And it is installed in the nearby inductive load (such as asynchronous motor, etc.).The way of reactive power compensation on the spot is called local compensation.

Main Characteristics

- Three phase medium voltage power capacitor, medium reliability, long operating life and low running temperature.
- Improve power factor to above 0.95.
- Improve power quality, transformer load factor and electrical equipment efficiency.
- Short-circuit protection to ensure safe working of the equipment.
- Compulsory close function to ensure operator's safety.

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HVPF medium voltage Passive Harmonic Filters



It is widely used in metallurgy, mining, oil, chemistry, machine-making, light industry, and municipal construction as well. These non-linear loads produce a large amount of higher harmonics into the power grid during the operation, as a result, the grid waveform is distorted, the power quality is deteriorated and the supply systems of other electrical equipment safety is threatened. Such pollution on the grid "power nuisance" can make transformers, cables and other electric devices generate additional losses; and cause the functions of control, protection and measurement abnormal, communications and networks are interfered.

HVPF series high passive filter compensation device is the best solution to solve the voltage and current distortion. Its main function is harmonic filtering, then reactive power compensation.

It brings out not only the system harmonic voltage distortion and harmonic currents flowing into the grid to meet IEC standards, but also the power factor is improved. Such, we achieve the dual purposes of governance and energy saving.

Main Characteristics:

- Professional simulation calculation, design, check, to optimize the device design.
- Customization filtering reactor and good-quality filtering capacitor adopted.
- Well-developed protection for the following: over-current, over-voltage, low-voltage, low cycle and so on.
- Simple structure, low investment, reliable operation performance and low-cost maintenance.
- High-quality filtering capacitor featuring high reliability, low power-consumption, and low temperature while working.
- Perfect capacitor protection is as follows: high-voltage step-by-step ejecting fuse adopted to carry out short-circuit
- protection for single capacitor, neutral-point imbalance current protection, open delta voltage protection, and voltage differential protection adopted for capacitor banks imbalance protection for capacitor banks.

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HSVG series of medium voltage static var generator

ideal solution for small and medium reactive power compensation and harmonic suppression, which adopts instantaneous reactive power theory, PWM pulse width modulation technology, multi-core processing technology. It can adjust all the range of reactive power from the output capacitive to inductive limitlessly. It can increase the grid stability fastest, increase output power capacity, eliminate the impact of reactive power, harmonic filter, and balance three-phase power grid,which is suitable for 35 kv and below voltage level of the power supply network.



Main Characteristics:

- Fast Calculation: parallel processing technology of multi-core, each order can be finished in nanosecond.
- Modular: Unit modular design, beautiful appearance, convenient maintenance.
- Redundancy: high operation reliability.
- Quick response: HSVG hardware system includes IGBT high-power switching unit and has the functions of instantaneous wattles algorithm, rapid suppression of voltage fluctuation and flicker and reactive power compensation. HSVG can give feedback within 10ms which can greatly weaken the impact of load power and protect electrical equipments.
- Little harmonics: HSVG is the technology of chain structure of main circuit and high frequency PWM control, which produce little low harmonic and reduce the harmonic pollution.
- Low power consumption: The chain structure of main circuit of HSVG doesn't need large capacity multi-transformer, all kinds of filters and big capacity of the reactor. It is low power consumption.
- Low noise: the use of aerospace heat pipe dissipation technology, the noise is less than 50dB.
- Small room: with the capacity of HSVG covers an area of more than half of the SVC.
- Perfect protection: perfect self protection system design, monitoring the HSVG components working status, and has a bypass protection function.
- Easy maintenance: HSVG units can be swapped; modular HSVG can be repaired individually and has no effect on each other.
- High power density: Linked reactor impedance and size is smaller, valve group is small.
- Wide operation range: The wattles current produced by HSVG is unrelated with the bus bar voltage. While the voltage of the bus bar is going down, HSVG works in constant current status, the reactive power compensation is strong. HSVG device has stronger compensation ability by 1.3 to 1.5 times than SVC device while both in same capacity.
- Flexible control mode: use constant reactive power or constant voltage control, three-phase balance control or split phase control solution.

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HVCT medium voltage static reactive power compensation Installations



It is a kind of typical flexible AC power transmission device, which supplies dynamic capacitive reactive power to the power system according to actual reactive power demand and capacitors bank grouping way. It is designed with instantaneous reactive power theory of small waveform analysis, dynamic measure calculation, combined judge and rational working. Its high–power thyristors in series forms high voltage AC non–contact switch to realize fast zero–pass switch for multi–level capacitor bank with non–contact, no flow, no switching transition and rapid change of its reactive power output

This device is widely used in machinery manufacturing, metallurgy, mining, coal Carbon, chemical, water, building materials, ports, railway electrification and the others which users need reactive power compensation, reduce reactive loss, improve power factor, increase line transmission strength, regulate voltage system, balance three–phase load, Improve power quality; suppress bus bar voltage change while fluctuation rushing load. The device is good for transient voltage recovery, improving the system voltage stability levels, user productivity efficiency and product quality.

Main Characteristics:

- Equipped with high quality shunt capacitors and series reactors to form LC circuit and strictly control component tolerances to ensure good quality match.
- In order to avoid the phenomenon of phase short circuit while component breakdown occurs, the capacitor bank in strict accordance with the relevant national standards adopting star connection.
- Adopts all–digital intelligent control system to achieve all–digital and LCD display with networking communication capabilities , you can see the time , working way, switching groups , and each bus bar voltage , current and power factor ;The computer system make a solution according to the capacity of the capacitor bank and demanded reactive power to achieve the most optimal operation purposes.
- Adopts optical triggering technology. Primary system and secondary system are completely isolated, meantime, it ensures the same period of the trigger signal, the voltage is turned on before pass and current is turned on after pass, high and low voltage electronics isolation to ensure safety.
- Valves is horizontal layout structure which is easy to observe and conducive to heat dissipation; It is individually arranged in a cabinet, which is isolated with capacitor bank, work safe and easily replace.
- Real–time monitoring of the state of each thyristor, fault alarm will be sent out within the problem tolerance. Moreover, beyond tolerance, tripping order will be sent out. Those ensure
- safety, help position the faults and maintain easily.

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HTCR series of Medium Voltage Reactive Power Static Var Compensator



It is a kind of typical flexible AC power transmission device, which is designed according to instantaneous reactive power theory and Steinmetz theory, and mutil-core processing technology with faster response; It is designed with SCR converter and self-cooling heat pipe technology to keep continuous unlimited adjustable reactive power compensation capacity with no flow, no arcing, maintenance-free and a longer life.

HTCR is applicable to 35kV and below voltage; it is best solution of reactive power compensation in its technology efficiency and response time. HTCR is particularly suitable for industrial applications that require fast compensation which can reduce the voltage fluctuation, flicker, three phase imbalance and harmonic interference caused by the impact load and nonlinear loads, increase power factor, reduce wire loss and transformer loss, stabilize voltage, improve power factor and achieve energy loss reduction efficiency.

Main Characteristics:

- Multi-core processing
- Adopts professional high-performance digital signal processors and high resolution AD Converter.
- Perfect self-protection system designed to monitor the working status of the thyristor .
- Adopts SCR as a master regulator which works with no arcing, no inrush current and long life.
- The advanced heatpipe cooling technology with no noise, high reliability and maintenance-free .
- Continuous and smooth adjustment in high precision and fast response time .
- Perfect communications capabilities to facilitate networking.
- Perfect self-diagnosis and real-time monitoring .
- Standard racking structure, good for installation and maintenance
- Light trigger way with strong anti-jamming ability.
- Monitoring system provides a good user interface and real-time display the variety of working conditions in the system.
- A variety of control ways like three-phase, single phase control.
- The ability of compensating three phase imbalance .
- Obvious suppression of system harmonic.

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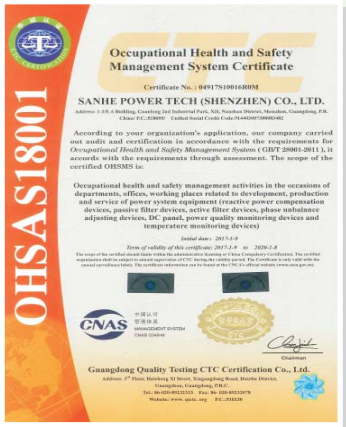
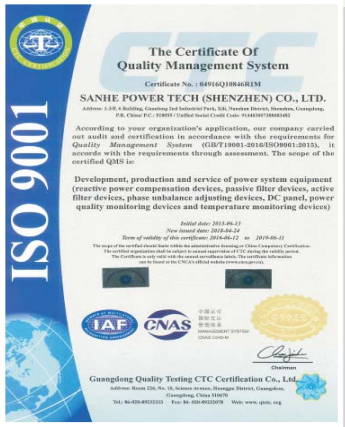
Certificates





















Partner

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