

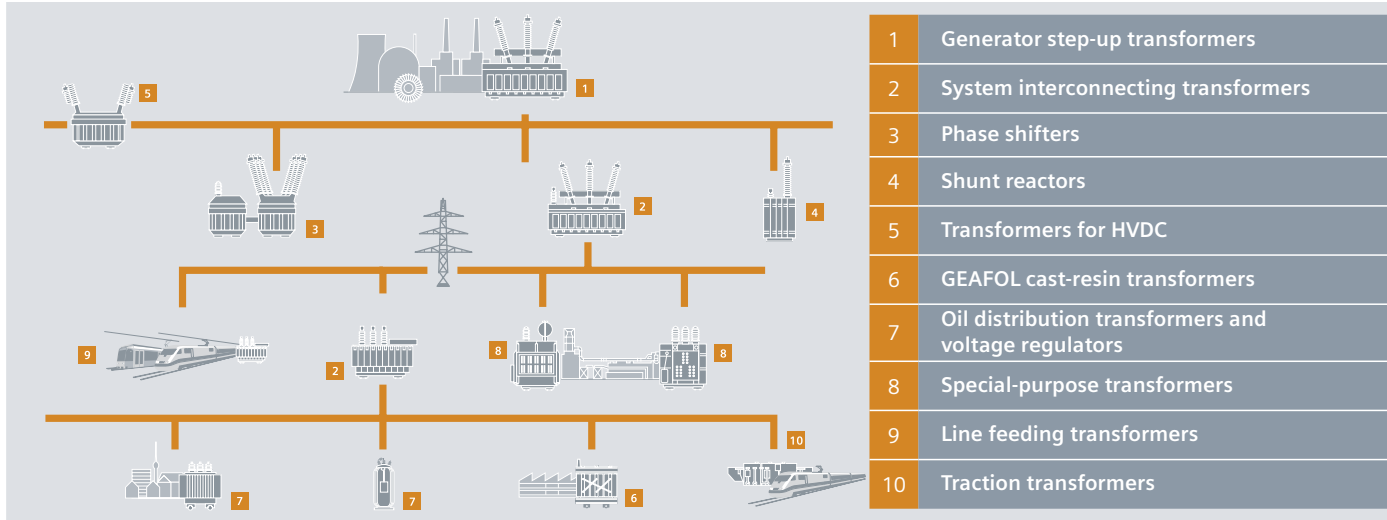


# Siemens Transformers China

Answers for energy.

**SIEMENS**

# Transforming know-how into solutions. Siemens Transformers.



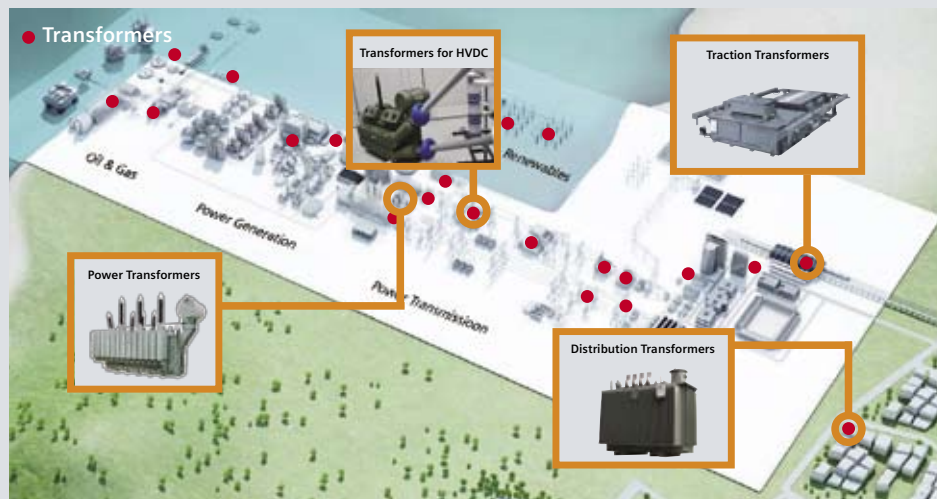
*Product range of Siemens transformers*

## Global Footprint

Whether for infrastructure systems, industry or households – transformers play a key role for a reliable power supply. As a customer, you quite rightly place the highest demands on reliability, cost-effectiveness and operation time. In more than 100 countries and for more than 100 years, transformers made by Siemens are synonymous with top quality – as a result of ideas, know-how and unequalled experience.

Siemens provides the right transformer for every need – from compact distribution transformers to large power transformers with ratings far above 1,000 MVA. The Siemens product range covers all mainstream requirements like UHVDC applications, low noise emission and environmentally friendly products with alternative insulation liquids, also embedded in a complete power system from generation via transmission to distribution networks. The long-term reliability of a transformer begins with its initial high quality. Then transformer lifecycle management measures maintain that quality throughout the transformer's entire life.

The local presence of Siemens in many countries also ensures that customers have better access to Siemens services and that they benefit from an efficient and effective distribution of Siemens resources as part of a global network. As Siemens factories around the world develop and produce their products, Siemens also encourages them to share their expertise. Siemens Transformers business unit has 21 transformer production locations with a total work force of approximately 8500 worldwide. Global transformer business is headquartered in Nuremberg, Germany.



*Siemens China can provide the complete portfolio of transformers in the whole energy conversion chain*

## Siemens Transformers in China

Siemens Transformers China has three manufacturing plants which are located in Guangzhou, Jinan and Wuhan with total investment of 1.2 billion RMB. The total area of three manufacturing plants is 240,000 m<sup>2</sup> with more than 1,300 employees. The annual manufacturing capacity reaches 70,000 MVA. We are specialized in producing HVDC converter transformers up to  $\pm 800$  kV, power transformers up to 500 kV, line feeders, traction transformers and distribution transformers. We are able to provide efficient transformer solutions - worldwide and always tailored to our customers' needs of different standards IEC, ANSI, AS, GB, etc.

### Siemens HVDC Converter Transformers Made in China

According to Siemens' global strategy, Siemens Transformer (Guangzhou) Co., Ltd. is building a HVDC converter transformer manufacturing base to meet the demands of China's market. With the completion in June, 2011, we will be capable to produce  $\pm 800$  kV HVDC converter transformers and will become Siemens' HVDC converter transformer after-sales service center in China. The new plant implements Siemens' environmental protection policy by introducing the green energy concept in the construction. We are also building one of the most advanced transformer manufacturing desert climate room in the world. With the latest HVDC converter transformer technology, we will become the first Siemens HVDC converter transformer manufacturing base in China, who will supply HVDC converter transformers to China and Asia Pacific through Siemens global sales network.

### Insulation Center Asia

The transformer insulation quality not only relies on the design and materials but also relies on the manufacturing quality of insulation components. Siemens Transformer (Wuhan) Co., Ltd. Insulation Center Asia is located in Wuhan Yangluo Economic Development Zone covering the land of 10,000 m<sup>2</sup> with the first investment of 46 million RMB. We focus on providing high quality insulation components and kits for Siemens Transformers plants in Asia Pacific. We utilize professional equipments from Germany and strictly stick to Siemens manufacturing processes and quality control procedures. Based on three-step development strategy, insulation components, manual molded parts and kits insulation parts can be provided to HVDC converter transformers up to  $\pm 800$  kV and the whole voltage range of power transformers from 110 kV to 1000 kV.

# Power Transformers

## System and system-interconnecting transformers

High voltage networks use different voltages (e.g. 500, 330, 220 kV). To enable the power flow of electrical energy between these networks for the cross-point system, interconnecting transformers are used. System transformers manage the connection of high voltage and medium voltage networks.



*334 MVA/500 kV transformer (AF) for Jiangnan substation in Yichang, Hubei*



*12 units of 300MVA/230kV transformers for EGAT in Thailand.*



*The first main transformer (300 MVA/220 kV OFWF) positioned in the substation of 2010 Shanghai Expo -- the largest underground substation in Asia*

## Sieformer-High performance Power Transformers

Widely used in electric power system and industrial sectors, with the features of lower losses, lower noise, lower partial discharge and higher durability, higher reliability, Sieformer will bring you the benefits of environmental protection, energy saving and high return on investment.



*50 MVA/110 kV transformers for Beijing Olympics Aquatic Park & Wukesong Basketball Indoor Stadium*



*2 units of 39MVA/132kV transformers for Australia Southern Seawater Company.*



*150 MVA/110 kV transformer (ONAN) with separately mounted radiator bank for BASF*

# Power Transformers

## Generator step-up transformers – customized advanced technology for high- and very-high-voltage systems

Generator step-up transformers enable an individual adaptation to the voltage levels of the power plant and transmission conditions. Siemens step-up transformers have set examples throughout the world – up to the power limit range.



*370 MVA/500 kV GSU transformers for Henan Datang Luoyang thermal power generation expansion scheme*



*Two units of 225 MVA/330 kV GSU transformer for AUS809 Neerabup gas-fired station in Australia*



*63 MVA/220 kV transformer (ONAN) for Datang Tuoketuo substation in Inner Mongolia*

# Transformers for HVDC

## – for especially efficient power transport under difficult conditions

Whether over long distances or between systems with different frequencies – the relatively new technology of high voltage direct current (HVDC) transmission ensures the economical transport of power. However, its implementation requires very special knowledge during the conception, manufacture and installation of the transformers and smoothing reactors. There are only very few companies that can provide this technology, and Siemens is the worldwide number one.



*800 kV UHVDC transformers for the world's longest and most powerful transmission links*



*14 HVDC transformers for the long distance transmission between the three gorges hydroelectric power station and Shanghai*



Technical Data	
Power single-phase	320 MVA
Voltage	$\pm 800$ kV UHVDC
Rated power	6,400 MW
Transmission distance	2,100 km

Technical Data	
Power	283.7 MVA
Voltage	$\pm 500$ kV DC
Transmission distance	1000 km



*Line feeders for Beijing-Tianjin Intercity Railway -- the first 350 km/h intercity link in the world*

Technical Data	
Type	DS-31.5 MVA / 220 ± 4 x 2.5 % / 2 x 27.5 kV
Vector Group	I, i0, i0
Rated Power	31.5 / 21 / 21 MVA
Cooling Method	ONAN
Quantity	8 units



*Traction transformers for Beijing-Tianjin Intercity Railway -- the first 350 km/h Intercity link in the world*

Technical Data	
Rated Power	5.64 MVA
Traction Windings	4 x 1.551 kV
Nomex insulation for highest energy density	
Mineral oil cooling	
Integrated design of transformer and cooling unit	
Pfisterer connectors on the transformers	

## Line Feeding and Traction Transformers

### Line feeding transformers – for AC and DC traction power supply

In high-speed railway's power supply system, line-feeding transformer is the essential part that transforming 110 kV or 220 kV into 27.5 kV to feed the traction system where various loading, harmonic and short circuit occurs frequently. These features identify line-feeding transformers as a special transformer which requires extreme capacity of handling frequent overload and short circuit conditions.

### Traction transformers – for a mobile society and fast transport of goods

Compact, economical and above all safe, Siemens traction transformers have accompanied – and in some cases enabled – the development of transportation systems for more than 90 years. Today they are used in locomotives, urban railways and high-speed trains – day in and day out.





*GEA FOL dry-type distribution transformers supplied to a famous European wind farm customer*



*Silicon oil distribution transformers supplied to CLP*

Technical Data	
High Altitude	
Rated Power	2100 kVA
Voltage	35 kV dry type transformer with dual low voltage windings
Clamping frame of steel plate with bending structure cut by laser machine	
Extraordinary anti-seismic ability and electrical feature	
Apply spring pressing system and special spacer block with high electrical and mechanical features to clamp the windings	

Technical Data	
Type	SR-1500 / 11.3
Rated Power	1500 kVA
Voltage Ratio	11.3 / 0.39 kV
Low Losses	
With Cable Box	

# Distribution Transformers

## **GEA FOL cast-resin transformers – for economical power supply directly at the consumer**

Cast-resin transformers are flameretardant, flame-extinguishing, and even with arcs do not ignite or develop poisonous gases – thanks to the environmentally friendly quartz-powder-filled epoxy resin insulation. The practically maintenance-free operation reduces the life-cycle costs, and the version with reduced no-load and short-circuit losses provides even greater efficiency.

## **Oil distribution transformers – for reliable supply through to the final consumer**

The smallest links in the chain of transformers are in operation at the end of the transmission and distribution of the electrical power. Hundreds of thousands of Siemens transformers are being used for this around the world – of optimizing to provide power inconspicuously, but efficiently and reliably to the consumer.



## Transforming knowledge into first-class products. Siemens **Transformers**

Why Siemens transformers are held in such high regard throughout the world can be explained very easily: because of the proven reliability in decades of continuous operation – often under the most demanding environmental conditions. The basis for this success is the acknowledged high quality of design and construction.



### **Systematic quality**

Our quality management system certified according to ISO 9001 is in effect in all factories where Siemens transformers are manufactured. It is organized in the same way everywhere, so quality is the logical result of a uniform philosophy.

### **Reliability right from the start**

Siemens transformers are subject to very stringent final approval tests performed at the place of manufacture. Highly specialized test laboratories are available for this purpose in all factories. The result: maximum availability and reliability in field use.

### **Extremely low failure rate**

In technical publications, a failure rate of 0.5 percent is considered as "excellent". A value lower than this is achieved in all our factories. This is the result of high quality standards which, of course, also apply to our subcontractors. A further reason is the comprehensive feedback of experience from operations, which we use to optimize our products.







## Transforming ideas into tomorrow's solutions.

### Siemens Transformers China R&D center

From the simple instrument transformer to today's high-tech product – the history of the transformer is full of trailblazing inventions and innovations. Always a leader in development: Siemens is a pioneer of the transformer technology. "Siemens transformers" represents a unique, worldwide sales, production and service network with offices, production centers and service facilities in more than 190 countries.

In Siemens, we believe that global expertise needs to be realized by localization of talent. Therefore Siemens Transformers China R&D center is established to support the integration of Siemens global know-how with local needs, and to further develop technology to meet today's dynamic challenges. The R&D center is the hub of technology development for all Siemens China's transformer manufacturing facilities, with talent people from each location working together, we are always leading edge in technology improvement and continuously building our success for future. The

establishment of the R&D center also reflects Siemens as a global company its long-term commitment in emerging markets.

The China R&D center is the regional research center in Siemens Asian Segment for the development of global Siemens Smart Grid Transformer. Working closely with Siemens global Smart Grid project, the technology of Siemens Smart Grid transformer will serve and concentrate on the rapid development of the strong smart grid initiative in China.


# Transforming service into reliability. Siemens Transformers


With your investment in a Siemens transformer, you expect maximum consideration over the entire operation time. You can rely on this: we are always there to assist you with our experience and technical competence.

## Longer operation time, optimized utilization with TLM™ – Transformer Lifecycle Management™


As with every other technical system, transformers are subject to a certain amount of wear during operation. The decisive factor is knowing the duration of trouble-free operation and implementing countermeasures in good time. The solution: Siemens TLM™ – Transformer Lifecycle Management™.


This term covers a wide range of services, with the goal to significantly lengthen the operation time of your transformers and therefore to optimize utilization over the entire operation time. In this way, you receive the optimum benefit from your investment.

 Condition Assessment and Diagnostics

 Online Monitoring

 Consulting & Expertise

 Maintenance & Lifecycle Extension

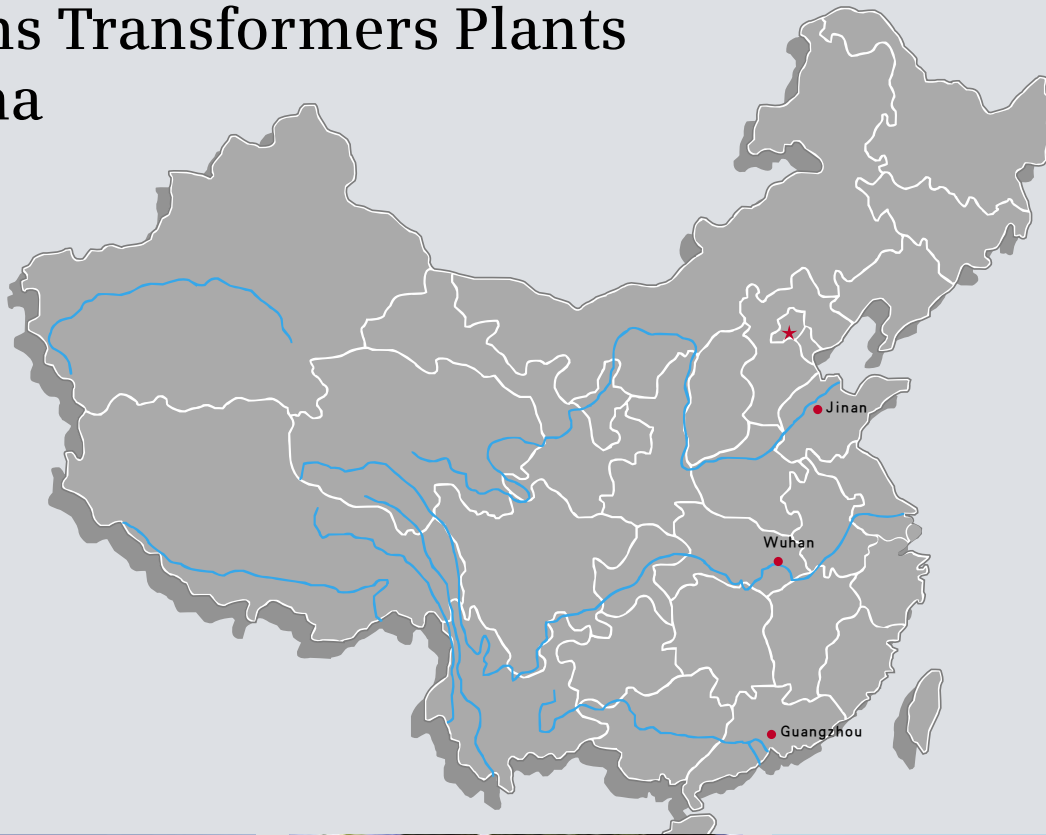
 Spare Parts & Accessories

 Repair & Retrofit

 Transport, Installation & Commissioning



# Siemens Transformers Plants in China



**Siemens Transformer (Guangzhou) Co., Ltd.**

Siemens Transformer (Guangzhou) Co., Ltd. is a large Sino-German joint venture who is one of the global technology leaders in transformer industry with total assets more than 200 million USD. Our company was established in 1998 covering the land of 65,000 m<sup>2</sup> with about 700 employees. We provide HVDC converter transformers up to ±800 kV, power transformers up to 1000 kV and distribution transformers with related service to utilities and industry customers. As one of the key enterprises of Guangdong equipment manufacturing industry, our company has been listed in "Top 100 Electrical Enterprises in China" for four years.

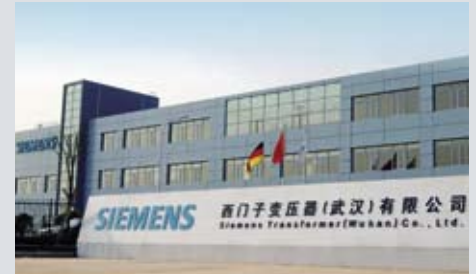
**Add:** No.26 Jungong Road, East Section  
**GETDD, Guangzhou, Guangdong, China**  
**Zip Code:** 510530  
**Tel:** 86-20-8226 6998  
**Fax:** 86-20-8226 6287



**Siemens Transformer Co., Ltd.**

Siemens Transformer Co., Ltd. is a Sino-German joint venture with 500 employees founded in 1994. The total investment is 15 million EUR, thereof Siemens AG holds 90% of the total shares. We are one of the 21 Siemens transformer manufacturing factories worldwide and produce oil-immersed power transformers up to 720 MVA / 500 kV, traction transformers and line feeders together with related equipment and service, the annual production capacity exceeds 25,000 MVA.

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**Siemens Transformer (Wuhan) Co., Ltd.**

Siemens Transformer (Wuhan) Co., Ltd. is a foreign enterprise with 180 employees fully invested by Siemens Ltd.,China and established on Dec,2007. We focus on the design and production of transformers up to 110 kV with annual manufacture capacity of 15,000 MVA. The design of the transformers adopts technical characteristics from the worldwide network of Siemens Transformer plants. We strictly stick to Siemens manufacturing processes and quality control procedures, and we provide our customers with high quality, high economic power transformers.

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**Tel:** 86-27-8936 0042  
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