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山东电力设备有限公司

Shandong Power Equipment Co.,Ltd.

SPECO

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COMPANY PROFILE

企业介绍

SPECO

01 | TO BE FAITHFUL, RESPONSIBLE
INNOVATIVE AND DEDICATED | 诚信 责任 创新 奉献

02 | STRIVE TO SURPASS AND
PERSIST TO GET EXCELLENCE | 努力超越 追求卓越



山东电力设备有限公司是隶属于国家电网公司山东电电气集团有限公司的大型国有企业，主要生产10千伏-1000千伏的配电变压器、电力变压器、并联电抗器、平波电抗器、换流变等电工电气产品，是中国大型电工装备骨干生产企业。

公司于1958年建厂，前身是山东电力修造厂、山东电力设备厂，2009年11月完成公司制改建，2011年3月正式更名为“山东电力设备有限公司”。现有员工1700余人，总资产20亿元，年生产能力超过8000万千伏安。产品覆盖全国二十六个省、市、自治区，远销印度、孟加拉、巴基斯坦、印度尼西亚、越南、蒙古、阿曼、阿尔巴尼亚、尼日利亚、苏丹、委内瑞拉、赞比亚、厄瓜多尔等国家。

公司始终坚持“标准化、规范化、精准化”管理，拥有先进的工艺装备、优秀的员工队伍、完善的质保体系，先后通过了ISO9001质量管理体系、ISO14001环境管理体系、ISO28000职业健康安全管理体系认证；公司可根据用户需求提供系统服务方案，保障电网安全稳定运行，实现与电力用户的共赢、与电力事业的共同发展。

2011年10月23日，公司自主研发的40万千伏安、1000千伏特高压升压变压器通过国家级鉴定。鉴定委员会一致认为，该特高压升压变压器具有结构合理，绝缘可靠，局放量小，损耗、温升和噪声低等特点，主要性能指标达到国际先进水平。该特高压变压器的研制成功，标志着公司变压器技术水平已达到世界一流水平。

已于2011年10月26日竣工的济南产业基地——特高压电力变压器及电抗器项目，总占地面积944.38亩，变压器产能1.1亿千伏安，电抗器产能1200万千乏，年产各类互感器2800台，是世界上单厂产能最大、工装设备最先进、试验能力最强的电工装备制造基地。

公司遵循“努力超越、追求卓越”的企业精神，不断推进技术进步和企业综合实力的提升，为中国、乃至世界电力发展做出应有的贡献。

Shandong Power Equipment Co., Ltd.(SPECO), a large state-owned enterprise directly subordinated to Shandong Electrical Engineering & Equipment Group Co., Ltd. of State Grid corporation of China, mainly manufactures various of electrical products, such as distribution transformers, power transformers, shunt reactors, smoothing reactors, converter transformers with the voltage ranging from 10kV to 1000kV etc, and is the backbone of large electrical equipment manufacturing enterprises.

The company was established in 1958 with the name of "Shandong Electrical Power Manufacture and Maintenance Plant", and "Shandong Power Equipment Works". In November of 2009, the company completed its corporate reform, and officially changed its name to "Shandong Power Equipment Co., Ltd." in March of 2011. At present, SPECO employs more than 1,700 people and has more than 2 billion RMB of total assets, and the annual production capacity exceeds 80GVA. Our products cover 26 provinces, municipalities, autonomous regions nationwide, and have been exported to India, Bangladesh, Pakistan, Indonesia, Vietnam, Mongolia, Oman, Albania, Nigeria, Sudan, Venezuela, Zambia, Ecuador, and other countries.

Our company always adheres to the "standardization, normalization, precision" management system, has advanced technology and facility, excellent staff, perfect quality assurance system, and has been qualified for the ISO9001 quality management system and ISO14001 environment management system, ISO28000 occupational health and safety management system certification; The company can provide system service plan based on user's needs and ensure the safe and stable operation of the grid, to accomplish win-win with power users and the common development with the electric power industry.

On October 23, 2011, the UHV step-up transformer of 400,000kVA/1000kV developed independently by SPECO, passed our national industry identification. The Appraisal committee reached the consensus that the UHV step-up transformer has reasonable structure, reliable insulation level, low partial discharge, low loss, low temperature rise and low noise. Its main performance indexes have reached the international advanced level. The successful development of ultra-high voltage transformer marks that the company has reached first-class level on the transformer technology.

The Jinan industrial base-UHV power transformer & reactor project completed on October 26, 2011, covers an area of 944.38 hectares; the production capacity of power transformers will reach 110GVA, reactors to 12 million kVAR, and all types of transformers to 2800 sets. The base is the electrical equipment manufacturing base with the largest capacity, the most advanced assembly facility and testing device in the world.

With the enterprise spirit of "strive to surpass and pursuit to get excellence", SPECO will continue to promote technology to improvement and promote the enterprise's comprehensive strength, and contribute to the electric power development for China and even the whole world.



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INDUSTRY BASE

产业基地

03
TO BE FAITHFUL, RESPONSIBLE,
INNOVATIVE AND DEDICATED



2011年10月26日，济南产业基地落成庆典暨十项重大电力装备研发项目启动仪式。
The completion ceremony for Jinan industrial base and the opening ceremony for research and development project of Ten Major Power Equipments held on October 26, 2011.

SPECO

04
STRIVE TO SURPASS AND
FOCUS TO GET EXCELLENCE

努力超越
追求卓越



① 总经理赵永志向山东省省委书记姜异康、济南市委书记王敏等介绍公司特高压系列产品研制

The president Mr. Zhao Yongzhi is introducing the development of series of UHV products to Mr. Jiang Yikang, the Provincial Party Secretary of Shandong Province, and Mr. Wang Min, the Municipal Party Secretary of Jinan, etc..

② 1000kV特高压变压器生产厂区鸟瞰图

The Aerial view of the manufacture plant of UHV 1000kV transformers

③ 产业基地一角
Views of the Industrial Base

④ 国网公司刘振亚总经理、山东省姜大明省长与公司赵永志总经理亲切会谈

The president of STATE GRID, Mr. Liu Zhenya and the Governor of Shandong Province Mr. Jiang Daming are having a cordial talk with Mr. Zhao Yongzhi, SPECO's president.



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PRODUCTS

产品介绍

公司主要生产各种电力变压器及电抗器，广泛用于电厂、电网、新能源以及各种工业领域。

公司生产的电力变压器有

按电压等级分：特高压变压器、超高压变压器、高压变压器和配电变压器；

按调压方式分：无载调压变压器和有载调压变压器；

按用途分：发电变压器、输电变压器和联络变压器；

按相数分：单相变压器和三相变压器；

按控制水平分：常规变压器和智能变压器。

The company mainly produces different types of power transformers & reactors, which are widely used in power plants, grids, new energy and other various industrial fields.

Main products are as follows:

According to the voltage classes: ultra-high voltage transformers, extra high voltage transformers, high voltage transformers and distribution transformers;

According to the ways of regulating voltage: no-load transformers and on-load transformers;

According to function: generator transformers, transmission transformers and inter connecting transformers (ICT);

According to the phase No.: single-phase transformers and three-phase transformers;

According to the control Routine: routine transformers and intelligent transformers.

产品特点：低损耗、低局放、低噪声、抗短路能力强，运行可靠性高，结构先进，性能优良，符合环保节能要求。

铁心：通过选材和先进工艺，确保铁心的损耗和噪音满足客户要求。

线圈：选用无氧铜杆拉制，绕组结构采用内屏连续式、连续式或螺旋式，电位梯度好，抗短路能力强。

夹件：采用板式夹件，使铁心结构紧凑，强度较好。

器身：器身组装完成后，进行煤油汽相干燥，确保局放和绝缘技术参数。

引线：采用流行排式布局，电场均匀，外观整洁美观。

钢结构件：各钢结构件采用整体喷钢砂工艺处理，涂漆工艺采用静电喷涂，确保表面光泽；箱沿可根据用户要求选用全焊死结构或者螺栓连接方式。

Product features: low loss, low partial discharge, low noise, strong short-circuit withstand capacity, high operating reliability, advanced structure, good performance, and meeting environmental protection and energy saving requirement.

Core: through the material selection and advanced technology, ensure that the core loss and noise satisfy the customer's requirements.

Winding: choosing non-oxygenic copper pole; adopting the continuous or spiral screen, structure have withstand capacity good potential gradient, and strong short circuit.

Clamp: using panel clamp to make the core structure compact and have better strength.

The active part: after the completion of the assembly, proceed kerosene vapor phase drying to promise technical parameters of partial discharge and insulation level.

Leads: using the popular platoon type layout to have the even electric field, neat and beautiful appearance.

Steel structure: adoptings whole steel grit spray and electrostatic spray technology processing; to ensure the surface smooth; using welding structure or bolt connections structure for tank according to user's requirements.





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TYPICAL PRODUCTS

典型产品—交流变压器

产品型号：DFP-400000/1000特高压升压变压器

The product model: 400MVA/1000kV step-up transformer

> 一、产品概述：

该产品是世界上电压等级最高的发电厂用升压变压器，该产品低压绕组与发电机出口相连，1000kV首端直接接入特高压电网，减少了升压环节，节约了土地资源和工程投资。

公司于2010年12月启动了特高压升压变压器的产品研发，2011年5月投产，9月一次顺利通过全部型式试验，实现了“零局放”产出，成为世界上第二家成功研制该产品的厂家，具有完全自主知识产权，全部性能指标达到了“国际国内双一流”。

> 1, Product description:

This product is a step-up transformer with highest voltage level used for power plant. Its low voltage winding is linked with generator outlet; the head end of 1000kV directly access to UHV grid, which reduce the step-up link and save land resources and engineering investment.

In December 2010, the company launched the research and development of UHV step-up transformer; in May, 2011, it was put into production; in September it smoothly passed all the type testing one time, realized the "zero partial discharge" output and all performance indexes reached first-class level at home and abroad. SPECO became the world's second manufacturer which successfully developed such product, totally having a independent intellectual property rights.

> 二、产品技术参数：

该产品为单相油浸式、双绕组、强油风冷、无励磁调压变压器，采用中性点调压方式。其主要技术参数如下：

> 2, Technical parameters:

This product is single phase, oil-immersed, double windings, forced oil air cooling, generator transformer with off-circuit tap changer, on neutral point. The main technical parameters are as follows:

产品型号：DFP-400000/1000	The product model: 400MVA/100kV single phase GT
额定电压：(1100/ $\sqrt{3} \pm 4 \times 1.25\%$)/27kV	The rated voltage: (1100/ $\sqrt{3} \pm 4 \times 1.25\%$)/27kV
额定容量：400/400MVA	The rated capacity: 400/400MVA
空载损耗：156.2kW	No-load loss: 156.2kW
空载电流：0.15%	No-load current: 0.15%
负载损耗：832.9kW	On-load loss: 832.9kW
噪声水平：73dB(A)	Noise level: 73dB(A)

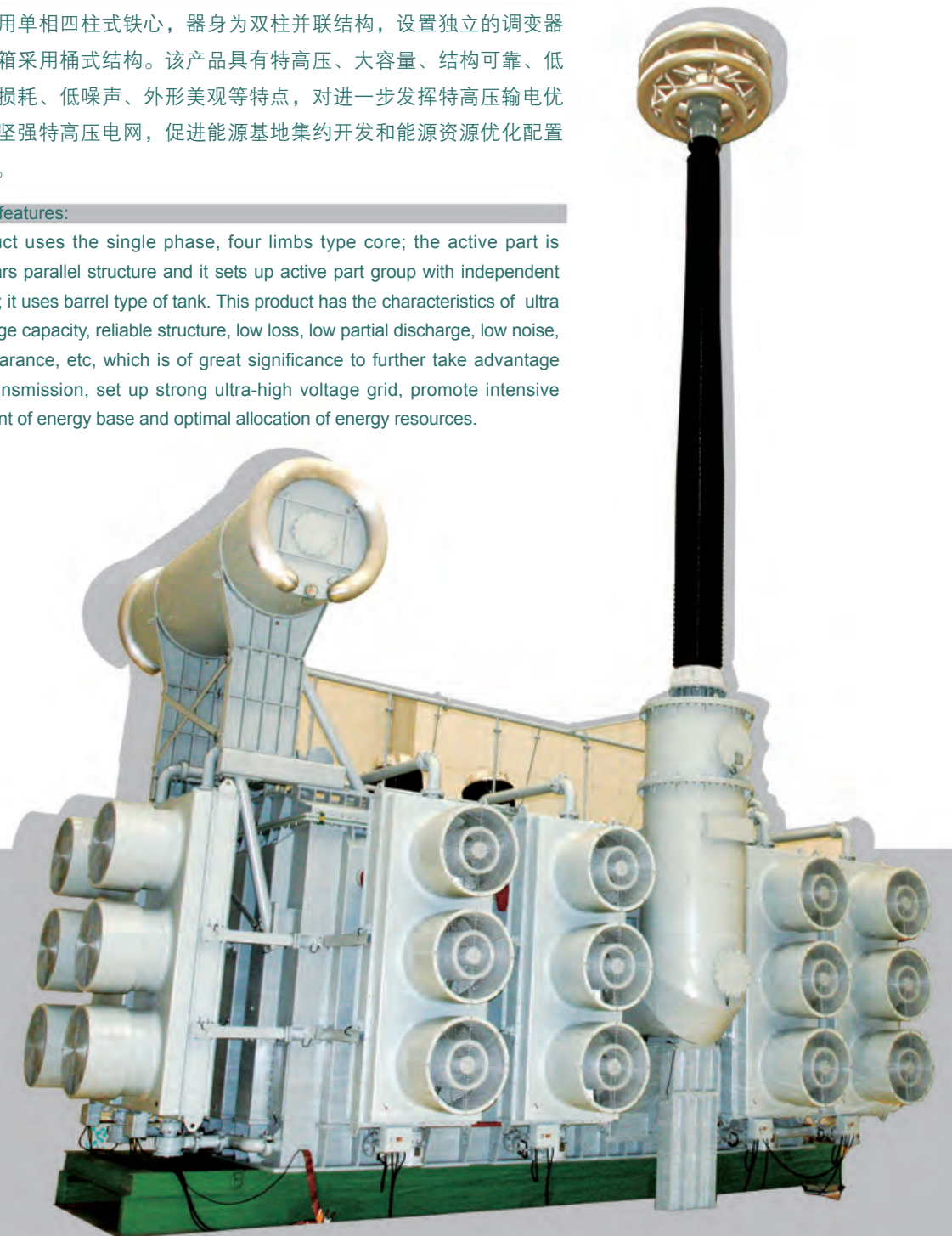
SPECO

> 三、产品特点：

该产品采用单相四柱式铁心，器身为双柱并联结构，设置独立的调变器身组，油箱采用桶式结构。该产品具有特高压、大容量、结构可靠、低局放、低损耗、低噪声、外形美观等特点，对进一步发挥特高压输电优势、建设坚强特高压电网，促进能源基地集约开发和能源资源优化配置意义重大。

> 3, Product features:

This product uses the single phase, four limbs type core; the active part is double pillars parallel structure and it sets up active part group with independent modulation; it uses barrel type of tank. This product has the characteristics of ultra voltage, large capacity, reliable structure, low loss, low partial discharge, low noise, good appearance, etc, which is of great significance to further take advantage of UHV transmission, set up strong ultra-high voltage grid, promote intensive development of energy base and optimal allocation of energy resources.





TYPICAL PRODUCTS

典型产品—交流变压器

产品型号：ODFPS-1000000/1000特高压自耦变压器

The product model: 1000MVA/1000kV auto transformer

> 一、产品概述：

该产品是目前世界上电压等级最高、单柱容量最大的电网用电力变压器。该产品的研制将为特高压电网的建设提供坚强的设备保障。

公司于2011年7月投产，2012年1月一次通过全部型式试验，性能参数达到国际领先。

> 二、产品技术参数：

该产品为单相三绕组、油浸式、无励磁调压自耦变压器，中性点调压，其主要技术参数如下：

产品型号：ODFPS-1000000/1000

额定电压： $(1050/\sqrt{3})/(525/\sqrt{3}) \pm 4 \times 1.25\%$ /110kV

额定容量：1000/1000/334MVA

空载损耗：185kW

空载电流：0.2%

负载损耗：1400kW

噪声水平：75dB(A)

> 三、产品特点：

该产品为中性点变磁通调压，分为主体变和调压补偿变两种。主体变采用双柱并联结构，单柱容量为500MVA。主体变压器与调压补偿变压器通过母线连接，主体变压器也可单独运行。

该产品的各项设计指标均达到了国内领先、国际一流水平，具有完全自主知识产权。

> 1, Product description:

This product is used for power grid with the highest voltage and the largest single pillar capacity in the world. The development of the product will provide strong equipment safeguard for the construction of UHV grid.

In July 2011, it was put into production, and passed all the type tests one time in January 2012. Its performance parameters reached international advanced level.

> 2, Technical parameters:

This product is single phase three-winding oil immersed auto transformer with off-circuit tap changer on neutral point. Its main technical parameters are as follows:

The product model: 1000MVA/1000kV single phase auto transformer

The rated voltage: $(1050/\sqrt{3})/(525/\sqrt{3}) \pm 4 \times 1.25\%$ /110kV

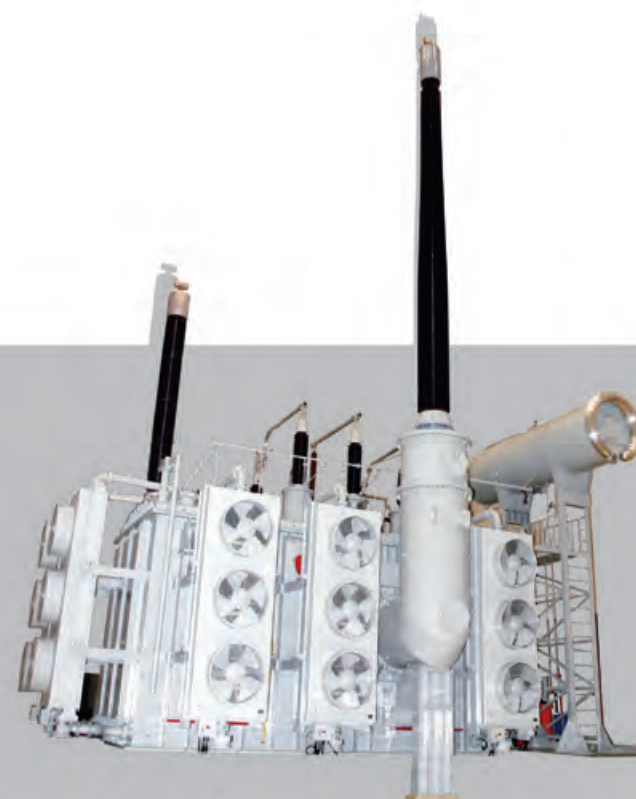
The rated capacity: 1000/1000/334MVA

No-load loss: 185kW

No-load current: 0.2%

On-load loss: 1400kW

Noise level: 75dB(A)



> 3, Product features:

The product is divided into main transformer and voltage regulating compensation transformer with variable flux regulating on neutral point. The main transformer uses double limbs parallel structure with 500MVA capacity of each limb. The main transformer which can operate separately is connected with voltage regulating compensation transformer by busbar.

The design index of this product reached the domestic leading, the international first-class level, with fully independent intellectual property rights.

产品型号：ODFPS-500000/750 自耦变压器

The product model: ODFPS-500MVA/700kV auto transformer

> 一、产品概述：

公司于2012年10月制造完成四台新疆伊犁ODFPS-500000/750，并全部一次性通过出厂试验，并于2012年12月全部通过现场交接试验，具备并网运行条件。

> 二、产品技术参数：

该变压器为单相油浸式、三绕组、强油风冷、无励磁调压变压器，采用中压首端调压方式。其主要技术参数如下：

产品型号：ODFPS-500000/750

额定电压： $/(\pm 2 \times 2.5\%)/63kV$

额定容量：500/500/150MVA

空载损耗：110kW

空载电流：0.1%

负载损耗：860kW

噪声水平：78dB(A)

> 三、产品特点：

该项目变压器的具有容量大、电压等级高的特点，为了满足运输条件以及为了降低漏磁，采用了两柱并联结构，降低了主线圈组内和结构件中的漏磁通量和漏磁密度，有利于降低损耗及避免局部过热等现象。

> 1, Product description:

In October, 2012, the company manufactured four units of 500MVA/700kV auto transformers for Yili substation, Xinjiang and smoothly passed factory acceptance tests one time. In December, 2012, it passed handover test with parallel operation condition.

> 2, Technical parameters:

This product is single phase, three windings, forced oil air cooling transformer with off-circuit tap changer on the head of neutral point. The main technical parameters are:

Product Model: 500MVA/700kV single phase auto transformer

Rated voltage: $/(\pm 2 \times 2.5\%)/63kV$

Rated capacity: 500/500/150MVA

No-load loss: 110kW

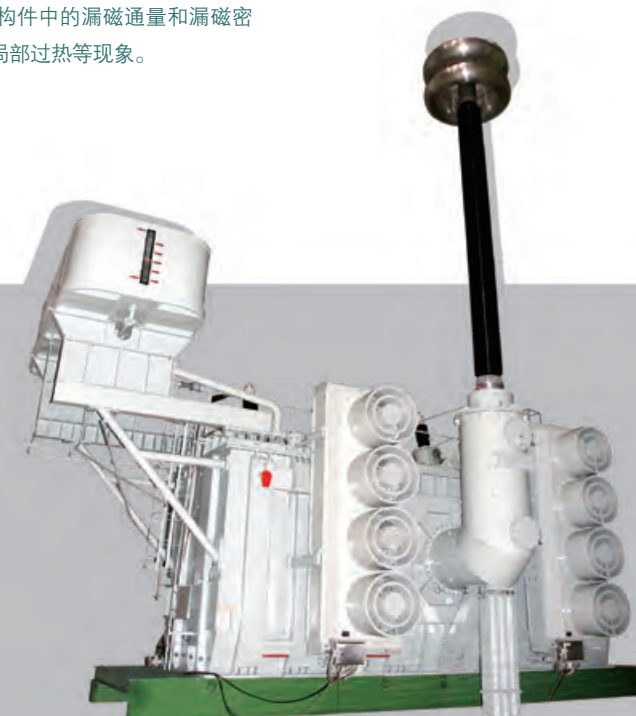
No-load current: 0.1%

On-load loss: 860kW

Noise level: 78dB(A)

> 3, Product features:

This product has the characteristic of large capacity, high voltage level, in order to meet the transport conditions and reduce the leakage flux, the structure use two limbs parallel structure, to reduce the leakage flux volume and density of main windings and structure parts, and also reduce losses and avoid partial overheating.





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TYPICAL PRODUCTS

典型产品—交流变压器

产品型号：ODFS-250000/500超高压电力变压器

The product model: 250MVA/500kV power transformer

> 一、产品概述：

自2000年公司生产第一台500千伏产品以来，经过技术改进与创新，已具备15万千伏安至40万千伏安全系列产品的设计制造能力，该系列产品具有低损耗、低局放、低噪声、低温升、高可靠性、外形美观等特点。技术指标均处于国内领先水平。

> 二、产品技术参数：

该产品为单相油浸式、三绕组、自然风冷、无励磁调压自耦变压器。其主要技术参数如下：

产品型号：ODFS-250000/500

额定容量：250/250/80MVA

额定电压： $(525/\sqrt{3})/(230/\sqrt{3} \pm 2 \times 2.5\%)/36kV$

空载损耗：69kW

空载电流：0.06%

负载损耗：320kW

噪声水平：65dB(A)

> 三、产品特点：

铁心为单相双框三柱式，主柱线圈排列为低-中-高结构，旁柱线圈排列为励磁-调压结构，器身整体套装，500kV首端直接出线，箱体为钟罩式。

该系列产品的各项性能指标均优于国家标准，处于国内领先水平。

> 1. Product description:

Since the company produced the first 500kV transformer in 2000, through technology improvement and innovation, the company already has 150MVA to 400MVA safety series product design and manufacturing ability. The series products have the characteristics of low loss, low noise, low partial discharge, low temperature rise, high reliability, good appearance, etc. The technical indexes are on the domestic leading level.

> 2. Technical parameters:

This auto transformer is single phase, oil-immersed, three winding, naturally air cooled, with off-circuit tap changer. The main technical parameters are:

The product model: 250MVA/500kV auto transformer

The rated capacity: 250/250/80MVA

The rated voltage: $(525/\sqrt{3})/(230/\sqrt{3} \pm 2.5\%)/36kV$

No-load loss: 69kW

No-load current: 0.06%

On-load loss: 320kW

Noise level: 65dB(A)

> 3. Product features:

The core is single-phase double-frame three-limb type; the coil of main limb is structured in low-medium-high pattern, and the coils of side limb are in excitation-voltage regulating structure; the active part adopts integral assembling; and outlet from head of 500kV, the tank uses bell type.

Each performance data is superior to the national standard, and on the domestic leading level.

产品型号：DFP-270000/400TH升压变压器

The product model: DFP-270MVA/400kV step-up transformer

> 一、产品概述：

该产品是公司专门针对国外市场研制，已出口100余台，产品性能赢得了广泛的国际赞誉。我公司已具备400千伏全系列产品设计制造能力，该产品低损耗、技术指标均优于IEC国际标准。该电压等级产品已通过KEMA实验室短路试验。

> 二、产品技术参数：

该产品为单相油浸式、双绕组、强油风冷、无励磁调压升压变压器。其主要技术参数如下：

型 号：DFP-270000/400TH

额定容量：270/270MVA

额定电压： $(420/\sqrt{3})/22kV$

空载损耗：95kW

空载电流：0.05%

负载损耗：478kW

噪声水平：65dB(A)

> 三、产品特点：

铁心采用单相双框三柱式结构，线圈排列采用高-低-高结构，有效地降低了变压器的运输高度及重量。在夹件及油箱内壁增加磁屏蔽及电屏蔽，有效降低结构件中的杂散损耗。

> 1. Product description:

This product is specially designed for the foreign markets, and more than 100 sets have been exported. Its product performance has won international. Our company has owned capability of designing and manufacturing the whole series of 400kV products. This kind of product has low loss, and the technical indexes is better than the IEC standard. One of transformers with 400kV has already passed short-circuit test in KEMA laboratory.

> 2. Technical parameters:

This product is single phase, oil immersed, double-winding, forced oil-air cooling, step-up transformer with OCLC. The main technical parameters are:

Type number: DFP-270MVA/400kV GT

The rated capacity: 270/270MVA

The rated voltage: $(420/\sqrt{3})/22kV$

No-load loss: 95kW

No-load current: 0.05%

On-load loss: 478kW

Noise level: 65dB(A)

> 3. Product features:

The core adopts single-phase, double frame, three-limb structure. The windings arrangement is high-low-high type, which effectively reduce the transportation height and weight of the transformer. The magnetic shielding and electric shielding are added in clamp and inwall of the tank, which effectively reduce the stray loss of the structure.





TYPICAL PRODUCTS

典型产品—交流变压器

产品型号：OSFSZ-300000/330自耦有载调压变压器

The product model: 300MVA/330kV auto transformer with on-load tap changer

> 一、产品概述：

公司自2003年开始生产第一台330千伏产品以来，已形成从1万伏安至36万伏安安全系列产品。该产品运行稳定可靠，具有低损耗、低局放、低噪声、高阻抗、造型美观等特点。该电压等级的典型产品一次通过荷兰KEMA实验室的监视试验。

> 二、产品技术参数：

型 号：OSFSZ-300000/330
额定容量：300/300/50MVA
额定电压：330±8×1.25%/132/33kV
空载损耗：90kW
空载电流：0.05%
负载损耗：590kW
噪声水平：65dB(A)

> 三、产品特点：

铁心为三相五柱式，线圈排列由内向外依次为低压-中压-调压-高压；通过内置电抗器实现高阻抗的目的，结构简洁可靠；分接开关合理布置，平顶钟罩式油箱，外形时尚。



> 1. Product description:

Since the company began to produce the first 330kV product in 2003, the series products from 10MVA to 360MVA have been formed. The product has the characteristics of stable and reliable operation, low loss, low partial discharge, low noise, high impedance, beautiful modeling, etc. The typical product at this voltage grade passed through the monitoring test conducted by the Netherlands KEMA laboratory.

> 2. Technical parameters:

Type: 300MVA/330kV auto transformer
The rated capacity: 300/300/50MVA
The rated voltage: 330±8×1.25%/132/33kV
No-load loss: 90kW
No-load current: 0.05%
On-load loss: 590kW
Noise level: 65dB(A)

> 3. Product features:

The core is three-phase, five limb type. The coil is arranged in low voltage-medium voltage-regulating voltage-high voltage sequence from inside to outside. It realizes purpose of high impedance through the built-in reactor. This kind of transformer has a simple and reliable structure. The tap changer is arranged reasonably. It has a flat-roofed bell tank with fashion appearance.

产品型号：SSZ-180000/220有载调压变压器

The product model: 180MVA/220kV on-load changer transformer

> 一、产品概述：

公司于1980年研制成功第一台220千伏产品，目前已形成从2万伏安至72万伏安安全系列产品，已投运700余台，其中高压内置式高阻抗变压器为国内首创。该系列产品运行稳定可靠，具有低损耗、低局放、低噪声、外形美观等特点，具有国内领先水平。

> 二、产品技术参数：

该产品为三相油浸式、三绕组、全自冷、有载调压变压器。其主要技术参数如下：
型 号：SSZ-180000/220
额定容量：180/180/90+60MVA
额定电压：220±8×1.25%/121/38.5+10.5kV
空载损耗：89kW
空载电流：0.08%
负载损耗：548kW
噪声水平：62dB(A)

> 1. Product description:

In 1980, the company successfully developed the first 220kV product. Currently it can produce the full series products from 20MVA to 720MVA, and more than 700 sets have already been put into operation, thereinto the high voltage and resistance built-in transformer is domestic initiative one. This series product has characteristics of stable and reliable operation, low loss, low partial discharge, beautiful shape, and reach the domestic leading level.

> 2. Technical parameters:

This product is oil-immersed three-phases, three winding, full natural cooling transformer with on-load tap changer. The main technical parameters are:
Type model: 180MVA/220kV
The rated capacity: 180/180/90+60MVA
The rated voltage: 220±8×1.25%/121/38.5+10.5kV
No-load loss: 89kW
No-load current: 0.08%
On-load loss: 548kW
Noise level: 62dB(A)



> 三、产品特点：

铁心为三相五柱式，线圈排列为稳-低-中-高-调压结构，高、中压线圈为内屏蔽连续式，低压线圈、调压线圈为螺旋式，器身整体套装，钟罩式油箱结构。该产品一次通过国网公司关键参数抽检，等级鉴定为“A”。

> 3. Product features:

The core is three-phase, five-limb type. The coil is arranged in stable voltage-low voltage-medium voltage-high voltage-regulating voltage sequence. The HV and MV coil adopts continuous inner shielding; and LV and regulating voltage coils are spiral type. The active part adopts integral assembling; the tank uses bell type. This product passed the sampling inspection of key parameter by SGCC, and got a grade appraisal for "A".



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TYPICAL PRODUCTS

典型产品—直流变压器

产品型号：±800千伏、±1100千伏特高压换流变压器

The product model: ±800kV, ±1100kV UHV converter transformer

> 一、产品概述：

为支撑特高压直流电网建设，公司启动了±800千伏、±1100千伏特高压高端换流变压器的研制，该项目2011年12月完成图纸设计，预计2013年7月完成全部研制工作，各项设计指标将达到国际领先水平。

> 二、产品技术参数：

1、±800kV换流变压器的主要技术参数：

产品型号：ZZDFPZ-363400/500-800

额定容量：363.4MVA

额定电压：535/√3/171.3kV

空载损耗：163kW

空载电流：0.11%

负载损耗：890kW

噪声水平：77dB(A)

2、±1100kV换流变压器的主要技术参数：

产品型号：ZZDFPZ-541500/750-1100

额定容量：541.5MVA

额定电压：770/√3/241.8/√3kV

> 1, Product description:

To support UHV DC power grid construction, the company launched the research and development of ±800kV, ±1100kV UHV converter transformers, and the drawings were completed in December 2011, will be finished in July 2013, and all the design indexes will reach the international advanced level.

> 2, Technical parameters:

1, The main technical parameters of the ±800kV converter transformer are:

The product model: ZZDFPZ-363400/500-800

The rated capacity: 363.4MVA

The rated voltage: 535/√3/171.3kV

No-load loss: 163kW

No-load current: 0.11%

On-load loss: 890kW

Noise level: 77dB(A)

2, The main technical parameters of the ±1100kV converter transformer are:

The product model: ZZDFPZ-541500/750-1100

The rated capacity: 541.5MVA

The rated voltage: 770/√3/241.8/√3kV

> 三、产品特点：

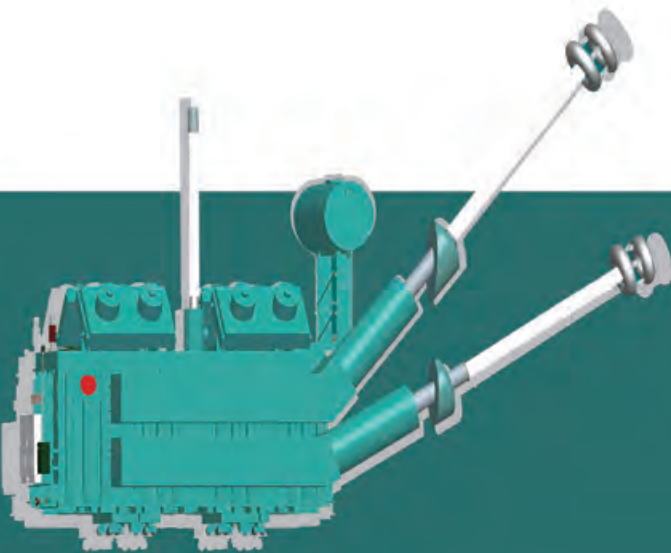
±800kV换流变压器采用两主柱铁心结构，器身结构为两柱并联式；网侧线圈采用纠结连续式结构，阀侧线圈采用屏蔽连续式结构；±1100kV换流变压器采用750kV端部出线，铁心为单相四柱式，调压线圈采用U型线圈结构，网侧线圈采用纠结连续式结构，阀侧线圈采用多根并绕螺旋式。

具有低损耗、低温升、低噪声、低局放等特点。

> 3, Product features:

±800 kV converter transformer uses two main limbs core structure; the active part adopts two limbs parallel structure; coil of grid lateral-line use the interleaved continuous structure, while coil of valve lateral-line use shielding continuous structure. ±1100kV converter transformer's outlet is on head of 750kV. the core is single phase, four limbs type; regulating voltage coil adopts U-structure; oil of grid lateral-line use the interleaved continuous structure; coil of valve lateral-line adopts multi-line screwed spiral structure.

They have the characteristics of low loss, low temperature rise, low noise, low partial discharge etc.



SPECO

产品型号：±200千伏、±400千伏换流变压器

The product model: ±200kV, ±400kV converter transformer

> 一、产品概述：

公司于2011年5月份启动±200千伏、±400千伏换流变压器研发，于2012年3月完成产品研制，并一次性通过全部型式试验，该产品具有完全自主知识产权，各项设计指标均达到国际一流水平。

> 二、产品技术参数：

1、±200kV换流变压器的主要技术参数：

产品型号：ZZDFPZ-363400/500-200

额定容量：363.4MVA

额定电压：535/√3/171.3kV

空载损耗：163kW

空载电流：0.11%

负载损耗：890kW

噪声水平：77dB(A)

2、±400kV换流变压器的主要技术参数：

产品型号：ZZDFPZ-363400/500-400

额定容量：363.4MVA

额定电压：535/√3/171.3/√3kV

空载损耗：163kW

空载电流：0.11%

负载损耗：890kW

噪声水平：77dB(A)

> 1, Product description:

In May, 2011, the company started the research and development of ±200kV, ±400kV converter transformers. The transformers were finished in March 2012 and passed all type tests one time, the products have the completely independent intellectual property rights, and the design specification reached the international first-class level.

> 2, Technical parameters:

1, The main technical parameters of the ±200kV converter transformer are:

The product model: ZZDFPZ-363400/500-200

The rated capacity: 363.4MVA

The rated voltage: 535/√3/171.3kV

No-load loss: 163kW

On-load current: 0.11%

On-load loss: 890kW

Noise level: 77dB(A)

2, The main technical parameters of the ±400kV converter transformer are:

The product model: ZZDFPZ-363400/500-400

The rated capacity: 363.4MVA

The rated voltage: 535/√3/171.3/√3kV

No-load loss: 163 kW

On-load current: 0.11%

On-load loss: 890kW

Noise level: 77dB(A)

> 三、产品特点：

该产品器身为两柱并联结构，单相四柱式铁心，调压线圈为单层筒式结构，分接之间增加避雷器，网侧线圈为单层螺旋结构，阀侧线圈为纠结连续式结构。该产品具有漏磁小、损耗低、局放低、振动小、可靠性高等特点。

> 3, Product features:

The active part of the product is two limbs parallel structure and single phase four-limb core type; the regulating voltage coils are monolayer barrel type structure; lightning arresters are added between taps; coil of grid lateral-line use the monolayer spiral structure, while coil of valve lateral-line use interleaved continuous structure.

This product has the characteristics of low magnetic flux leakage, low loss, low partial discharge, light vibration and high reliability.





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山东电力设备有限公司
Shandong Power Equipment Co., Ltd.

TYPICAL PRODUCTS

典型产品—电抗器

产品型号：BKD-240000/1100特高压并联电抗器

The product model: 240MVA/1100kV UHV shunt reactor

> 一、产品概述：

特高压并联电抗器是特高压电网无功补偿的关键装置，可以抑制系统工频电压升高和操作过电压，消除同步发电机带空载长线运行时产生的自励磁现象。公司于2011年6月开始研发，9月底已完成全部图纸设计，2012年完成产品制造。该产品为世界首台，设计指标达到“国际、国内双一流”。

> 二、产品技术参数：

该产品为户外、单相、风冷、油浸式铁心电抗器。其主要技术参数如下：

产品型号：BKD-240000/1100

额定电压：1100/ $\sqrt{3}$ kV

额定容量：240MVA

噪声水平：75dB(A)

> 三、产品特点：

该产品铁心为单心柱两旁轭结构。采用铁心弹性压紧装置及全方位漏磁屏蔽系统等特殊结构，有效的解决了并联电抗器振动大及局部过热等难题，具有绝缘可靠性高、无局部过热、振动小及损耗低等特点。

> 1. Product description:

UHV shunt reactor is the key device to reactive compensation of UHV grid, which can restrain system power frequency voltage rise and operating over-voltage, and eliminate the excitation phenomenon generated while no-load synchronous generator runs in a long time. In June 2011, the company began to launch the research and development; by September all drawings were completed. It was manufactured in 2012. This product is the first one in the world, and design indexes have reached the international, domestic first-class.

> 2. Technical parameters:

This product is outdoor, single phase, air cooled, oil-immersed core reactor. Its main technical parameters are:

The product model: 240MVA/1100kV

The rated voltage: 1100/ $\sqrt{3}$ kV

The rated capacity: 240MVA

Noise level: 75dB(A)



> 3. Product features:

The core of the product adopts a single limb and two-side- yoke structure, the core elastic pressure device and all-round leakage magnetic shielding system, and other special structures, which effectively solve the problem of strong vibration and partial overheat of shunt reactors. It has characteristics of high insulation reliability, no local overheating, light vibration and low loss.

产品型号：BKD-60000/500并联电抗器

The product model: 60MVA/500kV shunt reactor

> 一、产品概述：

公司于2011年7月完成500kV并联电抗器研制，一次性通过全部试验，各项性能指标达到国内先进水平。

> 二、产品技术参数：

该产品为户外、单相、自冷、油浸式铁心电抗器。其主要技术参数如下：

产品型号：BKD-60000/500

额定电压：500/ $\sqrt{3}$ kV

额定容量：60MVA

损耗：120kW

噪声水平：75dB(A)

> 三、产品特点：

该产品铁心为单心柱两旁轭结构。线圈采用全纠结式，有效地改善了冲击电压分布，减少了线圈的附加损耗。圆筒式油箱，结构简单，产品经济性好。该产品具有无局部过热、振动小、重量轻及外形美观等特点。

> 3. Product features:

Its core is a single limb, two-side-yoke structure. The coils adopt interleaved type, which effectively improves the impulse voltage distribution, and reduces the additional loss of the coil. The product uses barrel type tank with simple structure, good economy. The product has the characteristics of no local overheating, light vibration, light weight and beautiful shape etc.



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TYPICAL PRODUCTS

典型产品—配电变压器

产品型号：智能箱式变电站

The product model: intelligent pre-fabricated substations



产品概述：

智能箱式变电站采用的智能型元器件包含电源、接口器件、通信介质、控制设备等智能组件，从而实现主站通过总线对断路器、电网的远程测量、调节、控制、通信；并对高低压侧进行本地或远程的测量、调节、控制、通信。反映各高、低压开关分合闸状态，实现“四遥”功能。

Product description:

The intelligent components of the intelligent pre-fabricated substations include power supplies, interface devices, communication medium, the control equipments, so as that the main station takes the remote measuring, regulating, controlling, communicating of circuit breaker and power grid through the busbar; and local or remote measuring, regulating, controlling, communicating of the high and low voltage side, reflecting on & off state of the high and low voltage switch.

产品型号：干式变压器

The product model: dry type transformer



产品概述：

环氧浇注干式变压器线圈是在真空状态下用环氧树脂浇注而成，具有损耗低、局部放电率低、噪声小、散热能力强、防潮性能好、安全、无污染、安装简便、免维护、综合运行成本低的特点，可在100%湿度下正常运行，停运后不经预干燥即可投入运行。根据不同的使用环境，可配置不同防护等级的外壳或不配置外壳。

Product description:

The winding of epoxy cast dry type transformer is casted using epoxy resin in vacuum condition, and has characteristics of low loss, local discharge and noise, good heat dissipation and moisture proof, good safety, no pollution, easy installation, free maintenance, low comprehensive cost. It can operate normally in 100% humidity, and can run without dry after off-stream. According to different using environment, can be equipped with different protection grade shell or not configure shell.

产品型号：非晶合金变压器

The product model: amorphous alloy transformer



产品概述：

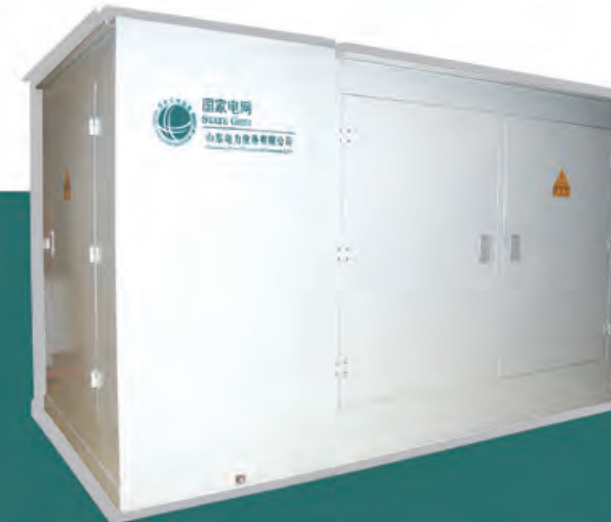
非晶合金变压器是一种新型节能环保的配电产品，铁心用非晶合金带材卷制而成，空载损耗仅为S11变压器25%左右，节能效果显著。该产品大量入网运行，可减少燃料消耗，改善环境，是城网和农网改造理想换代产品。

Product description:

Amorphous alloy transformer is a new type of energy saving and environmental protection distribution product, whose core is made by coiled material of amorphous alloy tape, so that no-load loss is only about 25% of S11 transformer, having a remarkable effect of energy saving. The products are vastly put into the grid operation, which can reduce fuel consumption and improve the environment condition. They are ideal replacements for the reconstruction of urban and rural grid.

产品型号：风力发电专用组合式变压器

The product model: the combined transformer special for wind power generation



产品概述：

风力发电组合式变压器是将升压变压器、高压负荷开关、高压熔断器、高压避雷器、低压开关及电源变压器等辅助设备装于一个外壳内的一种成套变电站。具有安装方便、体积小、功能齐全、施工周期短、运行费用低、结构强度较高、外壳个性设计等特点，适用于气候比较恶劣的高原、荒漠及海洋地区的风电场。

Product description:

Wind power combined transformer is a complete substation which is installed the auxiliary equipment, such as the step-up transformer, HV loading switch, HV fuse, HV arrester, LV switch and power supply transformer into a shell. With convenient installation, small volume, complete function, short construction period, low operating cost, the high structure strength, good shape, it can be applied to wind farms in plateau, desert and ocean area with bad weather.



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TYPICAL PRODUCTS

典型产品—智能产品

产品型号：智能变压器

The product model: intelligent transformer

> 一、产品概述：

智能变压器是公司针对智能电网需求研发的智能化高压设备，具有测量数字化、控制网络化、状态可视化、功能一体化和信息互动化等特征。公司从2006年开始研究变压器的智能化，2007年承担并完成了国家电网公司的科研项目“智能变压器系统集成”，产品运行可靠并通过了国网公司验收。目前已完成适合智能电网发展并具有自主知识产权的智能变压器10余台，具有行业先进水平。

> 二、产品功能：

该系统可实现对变压器温度、油位、继电器、油中气体及微水、套管、铁心接地电流、局部放电、有载开关、冷却器等的测量、控制和监测等功能。

> 三、产品特点：

我公司研制的智能变压器充分利用先进的传感器技术、测量技术、通信网络技术、控制和决策技术，是基于以太网通信的智能化一次设备。

智能变压器由变压器本体和智能组件组成，可实现对变压器的运行状态进行实时监测与控制，并且对监测数据进行智能判断和分析，确定变压器的健康状态，一旦发现异常立即报警、故障定位并提供事故原因和专家建议。

> 1, Product description:

Intelligent transformer, designed for the smart grid needs, is the intelligent high voltage equipment with features of digital measuring, network controlling, state visualization, function integrating and information interacting. From 2006, the company began to research the intelligent transformer. In 2007, SPECO undertook and completed the State Grid's research project "intelligent transformer system integration". The product operated reliably and was accepted by the State Grid. By now, our company has already completed 10 sets of intelligent transformers for the development of intelligent power grid, with independent intellectual property rights, which have reached industrial advanced level.

> 2, Product function:

The system can realize the functions of measuring, controlling and monitoring to the transformer's oil temperature and level, relays, gas and micro water in the oil, bushing, current of the core earthed, local partial discharge, on-load tap changer, and cooler, etc.



> 3, Product features:

The intelligent transformer developed by our company makes full use of the advanced sensor technique, measurement technology, the communication network technology, control and decision-making technology, is the primary intelligent equipment based on Ethernet communication.

The intelligent transformer, consisting of main body and intelligence components, can be used to real-timely monitor and control the operating state of the transformer, and intelligently judge and analyze the monitoring data, to determine the health status of transformer, and once abnormalities are found, immediately alarm, locate faults and provide the cause of the accident and expert advice.



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INDUSTRIALIZED SERVICE OF REPAIR AND MAINTENANCE

工厂化检修服务



山东电力设备有限公司在电力行业有着悠久的检、抢修历史和显著工作业绩。公司检修业务覆盖10kV~1000kV交流变压器、±200~±800换流变变压器、330kV~1000kV电抗器等系列产品。

随着国家电网公司“三集五大”体系建设的逐步深入，我公司积极地参与到各网省公司的“大检修”工作中，不断拓展检修业务，以更优质的产品和服务，为确保电网安全稳定运行提供强有力的保障和支撑。目前，工厂化检修市场已经形成以山东为主导，其它省、市、县区兼顾的市场模式。

SPECO has a long history of repair and maintenance and reaches significant achievements in the power sector. The repair and maintenance business of SPECO include AC transformers ranged from 10kV to 1000kV, converter transformers ranged from ±200 to ±800kV and reactors ranged from 330kV to 1000kV. With the gradual deepening of the system foundation of State Grid Corporation, SPECO has actively participated in the maintenance system of various provincial companies and constantly expanded maintenance business. SPECO, with its optimized products and services, provides the strong device support for guarantee the safe and stable operation of the power grid. Nowadays, the industrialized maintenance market is led by Shandong Province with the participation of other provinces, cities and districts.



2012年8月16日，山东电电气集团有限公司党组书记兼副总经理赵永志，副总经理刘立成应邀参加河北省电力公司举行的工厂化检修和技术服务签字仪式。

On 16th August 2012, Mr. Zhao Yongzhi, the secretary of CPC Geberal Branch of SDEE Group and the vice president, Mr. Liu Licheng were invited to participate in the signing ceremony of industrialized maintenance and technological service celebrated in Hebei Power Corporation.



2012年8月30日，山东电电气集团有限公司党组书记、副总经理赵永志与山东电力集团公司副总经理张方正出席山东电力集团公司变压器、GIS工厂化检修基地签字仪式。

On 20th August 2012, Mr. Zhao Yongzhi, the secretary and vice president of SDEE Group, and Mr. Zhang Fangzheng, the deputy president of Shandong Power Group, attended the signing ceremony of the transformer and GIS industrialized maintenance of SEPCO.

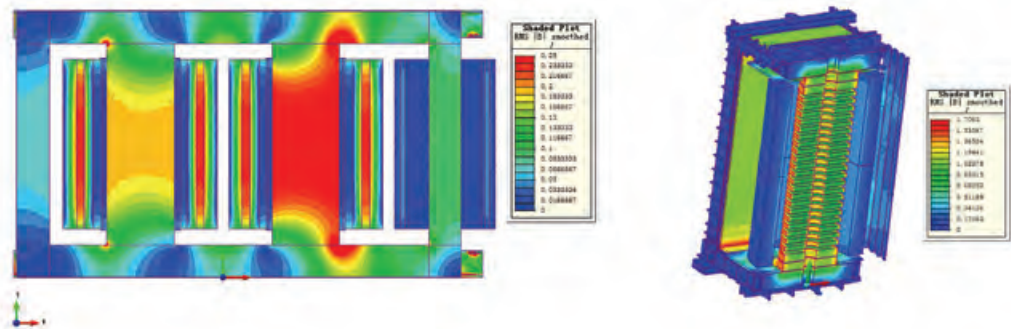


国家电网
STATE GRID

山东电力设备有限公司
Shandong Power Equipment Co., Ltd.

RESEARCH & DEVELOPMENT

技术研发



公司长期致力于输变电领域关键技术、工艺、设备的研究与开发，自1980年公司自主研发制造出第一台220千伏电力变压器以来，公司技术研发不断取得突破：

1997年，第一台220千伏37万千伏安大容量发电变压器投入运行；

2000年，第一台500千伏16.7万千伏安电力变压器投入运行；

2009年，第一台750千伏27万千伏安电力变压器一次性通过全部试验。

2011年9月22日，1000千伏特高压升压变压器一次通过全部型式试验，创造了变压器行业研发时间最短、性能参数最优、“零局放”产出、一次试验成功的新纪录，实现了“国际国内双一流”。

2012年，1000千伏特高压自耦变压器、1100千伏并联电抗器，相继研制成功，并一次通过全部型式试验。

±800千伏、±1100千伏换流变压器正在陆续研制中。

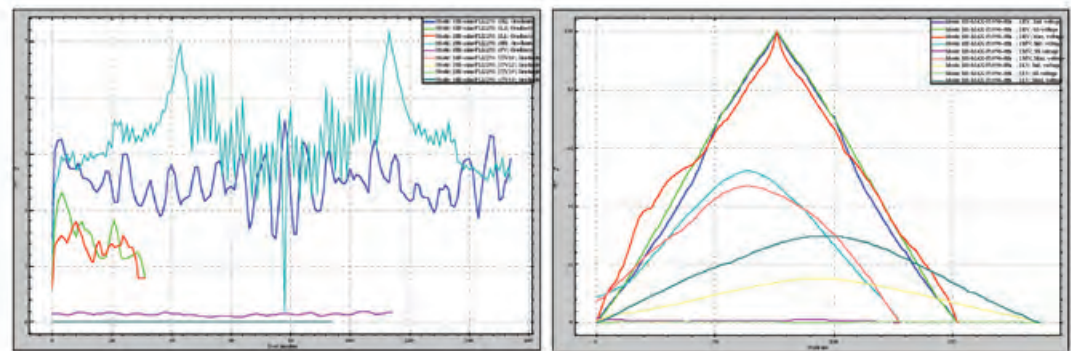
2010年12月29日，以公司为依托的中国电力技术装备有限公司超特高压变压器技术研发中心成立，进一步明确了我公司今后技术发展的定位：超特高压交流变压器、换流变压器、并联电抗器、平波电抗器、智能变压器等全系列、全容量、交直流电工电气产品。

公司拥有一支以享受国务院政府津贴专家学者、行业知名专家、中青年技术骨干为主体的研发队伍，研发人员147人，优秀的人才储备为公司持续技术创新奠定了坚实的基础。公司累计获得发明专利和实用新型专利数十项，先后被认定为山东省高新技术企业、山东省企业技术中心，是中国电气工业协会变压器分会理事单位。

公司依托中国智能电网研究院，加强与国内外知名高校、世界顶级变压器研究所（如VIT、VEI）合作，积极开展电工电气领域的前沿基础研究，丰富设计理念，推进技术进步。同时，公司为完善技术研发手段，先后引进变压器电场、磁场、短路力、波过程、主绝缘、机械力等分析软件，为不断优化设计、成功开发新产品提供了可靠的保障。

展望未来，公司将继续加大研发投入力度，坚持全系列、全容量、交直流的研发思路，不断推进技术进步，为世界电力发展做出新的贡献。

SPECO



The company has been devoting to research and development of key technology, craft equipment. Since 1980, the successful manufacture of the first self-developed 220kV power transformer, our company has achieved continuous breakthroughs on technology research and development:

In 1997, the first 220kV/370000kVA, high-capacity power transformer was put into operation;

In 2000, the first 500kV/167000kVA power transformer was put into operation;

In 2009, the first 750kV/270000kVA power transformer passed all the tests at one time.

On September 22, 2011, 1000kV UHV step-up transformer passed all type tests, and created several new records of researching and developing in the shortest time, the best performance parameters, "zero-partial discharge" output, successfully passing all tests, one time in transformer industry, achieved international and domestic first-class level.

In 2012, 1000kV UHV auto transformer, 1100kV shunt reactor passed all type tests successfully.

±800kV, ±1100kV converter transformers are in the process of R&D.

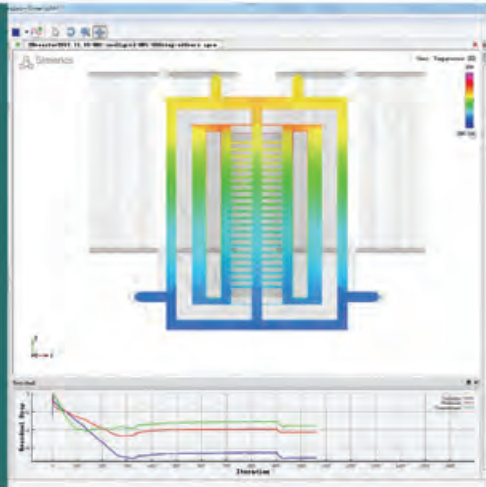
On December 29, 2010, relying on the China Electric Power Technology&Equipment Co., Ltd., the company set up the UHV transformer R&D center, further clarifying our future technology positioning: UHV AC transformers, converter transformers, shunt reactors, smoothing reactors, intelligent transformers, etc, full range, full capacity, AC/DC electric products.

The company has a main R&D team of including the experts enjoying allowance from the State Council, famous experts in this industry, 147 young technical engineers. The excellent talents reserve has laid a solid foundation for the company's continuous technological innovation. The company has totally received dozens of patents of innovation and utility model, and has been identified as "High-tech Enterprises in Shandong Province", and "Shandong Province Enterprise Technology Center", the director of transformer branch of China Electric Industry Association.

Relying on China Intelligent Grid Institute, SPECO enhances to cooperate with the well-known universities at home and abroad and the world's top transformer Institute (such as VIT, VEI). The company actively carries out frontiers basic research in electrical field, rich design ideas, and promote the technological progress. Meanwhile, to improve the technical means, the company has

introduced the analysis software for the transformer electric and magnetic fields, short-circuit power, wave processes, the main insulation, mechanical strength, providing reliable guarantee for optimizing the design and the successful developing of new products.

Looking ahead, the company will continue to increase R&D investment, insist on R&D ideas of full range, full capacity and AC/DC, and will constantly push forward technical progress and make new contributions to the development of electric power for the world.





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Shandong Power Equipment Co., Ltd.

RESEARCH & DEVELOPMENT

技术研发

2012年，国网智能电网研究院变压器研究所、山东电力设备有限公司院士工作站、山东电力设备有限公司试验中心相继落户我公司。

变压器研究所是国网智能电网研究院与山东电工电气集团有限公司共同组建的变压器研究开发机构。变压器研究所的定位是通过持续的自主创新，突破高端变压器等产品的技术壁垒，进一步提高国家装备制造业水平。变压器研究所下设交流变压器、换流变压器、电抗器、基础及材料、变压器智能化等5个课题组。研究所的研究方向是针对全系列交流变压器、换流变压器、并联电抗器、平波电抗器及SF6、超导变压器设计和制造、变压器智能化等方面开展基础理论研究、关键技术攻关及高端产品研发，力争在材料和关键组部件等核心技术方面实现全面的技术突破和自主化研发能力的大幅提升，支撑智能电网建设发展。

山东电力设备院士工作站是经山东电力设备有限公司申请，山东省委组织部、山东省科技厅、山东省财政厅、山东省人力资源和社会保障厅、山东省科协五部门于2012年9月25日联合发文批准设立的企业院士工作站。该院士工作站由山东电力设备有限公司与西安交通大学邱爱慈院士创新团队合作建设，以电力变压器直流偏磁技术、超特高压电力变压器抗短路能力、超导变压器及超导限流器制造关键技术研究等关键技术难题为主要研究方向。该工作站的成立可以促进企业建立产学研相结合的创新体系，为企业提供发展战略研究、科技成果转化、创新人才培养等服务，为增强企业的自主创新能力和市场竞争力提供有力支撑。

山东电力设备有限公司试验中心具备10~1000千伏变压器、电抗器的试验检测能力。中心还积极开展对外检测业务，先后承担了全光纤电流互感器型式试验、1000kV等级GIS、支柱绝缘子检测、±800kV换流阀塔检测及相关研究工作。2012年10月，公司试验中心正式通过了中国合格评定国家认可委员会（CNAS）的认可。实现检测结果互认、检验校准质量体系与国际接轨，有利于消除国际贸易中的技术壁垒，为公司产品和服务进入国际市场提供更加强有力的资信证明。

SPECO

In 2012, the transformer research institute of the Smart Grid Research Institute of State Grid, academician workstation and test center of SPECO settled down in our company consecutively.

The SPECO transformer research institute is an agency for the research and development of transformers co-founded by the Smart Grid Research Institute of State Grid and the SDEE Group, aiming at breaking through technical barriers and improving the level of national equipment manufacturing industry further by constant innovations. Five study teams are established under the transformer research institute: AC transformer, converter transformer, reactor, basic material and the intellectualization of transformers, etc.. The direction of the research institute is to carry out basic theoretical researches, crucial technology tackle and high-end product develop on various series of AC transformers, converter transformers, shunt reactors, smoothing reactors, the design and manufacture of SF6 and superconducting transformer and on the intellectualization of transformer. The goal of the institute is to achieve comprehensive technological breakthroughs and dramatic improvement of independent research and development ability on the core technologies such as material and crucial components and to support the construction and development of the smart grid.

The academician workstation, which was applied by SPECO is an enterprise that established on 25th September, 2012 that approved and jointly issued by five departments, the Organization Department of Shandong Provincial Party Committee, Shandong Provincial Science and Technology Department, Shandong Provincial Finance Department, Shandong Provincial Human Resources and Social Security Department and Shandong Provincial Science Association. The workstation was co-founded by SPECO and the innovative team of Qiu Aici, the academician of Xi'an Jiaotong University. The main research directions of the workstation are key technical problems such as AC magnetic bias technology of power transformers, ability to withstand short circuit of UHV power transformers and key technologies of the manufacture of superconducting transformers and flow restrictors, etc.. The foundation of this workstation could strongly promote the company to establish an innovative system combining production, study and investigation, could serve company with the strategy of R&D, the transformation of scientific and technological achievements and the training of innovative personnel and strongly supports the company to improve independent innovative abilities and competitiveness.

The Test Laboratory of SPECO has the capacity of inspecting transformers and reactors ranged from 10kV to 1000kV and possesses the qualification to carry out the business face exterior companies. The test center has been successfully undertook the type test of all-optical current transformer and GIS of 1000kV, the test of support insulator and the test of converter valve tower of ±800kV, etc.. In October 2012, this testing center was officially approved by CNAS, achieving the mutual recognition of test results and a system of calibrating quality of international standards, which helps to eliminate technological barriers in international trade and provide the products and service of the company with stronger credit certifications for the access to the international market.

山东电力设备有限公司

院士工作站

（2012年-2015年）

中共山东省委组织部 山东省科学技术厅 山东省财政厅
山东省人力资源和社会保障厅 山东省科学技术协会
二〇一二年九月

山东电力设备有限公司试验中心

Shandong Power Equipment Co., Ltd. Test Center



中国合格评定国家认可委员会



国家电网
STATE GRID

国网智能电网研究院
STATE GRID SMART GRID RESEARCH INSTITUTE

变压器研究所



国家电网
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山东电力设备有限公司
Shandong Power Equipment Co., Ltd.

PRODUCTIVE CAPACITY

生产能力

SPECO



公司现有三个生产厂区，产品主要涵盖10千伏至1000千伏电力变压器系列产品，合计产能超过8000万千伏安。其中，南厂区以生产配电变压器、220kV及下电压等级变压器及检修项目为主；2008年落成的750厂区以生产超特高压变压器为主，具备生产1000千伏变压器的能力；2011年落成的特高压产业园以生产交直流超高压变压器为主，拥有国际一流的全密封厂房、先进的生产和试验设备、专用工装，在硬件设施上已达到国际先进水平。特高压产业园后续建设项目竣工达产后，公司整体产能将超过1.1亿千伏安。

SPECO, whose products mainly cover series of power transformers ranged from 10kV to 1000kV, owns three production plants now and has a total production capacity up to 80GVA. The southern plant, among these three plants, mainly aims at the fabrication of distribution transformers, transformers of 220kV and below and maintenance projects. The 750 plant was finished built in 2008 primarily manufactures the UHV and EHV transformers and is capable of producing transformers of 1000kV. Besides, the UHV industrial base completed in 2011, which mainly fabricates the UHV AC and DC transformer and owns the hardware facilities of international level, including the fully sealed factories and advanced production and test equipment. Once the UHV industrial base are completely founded and put into operation, the total production capacity of SPECO will exceed 110,000,000kVA.





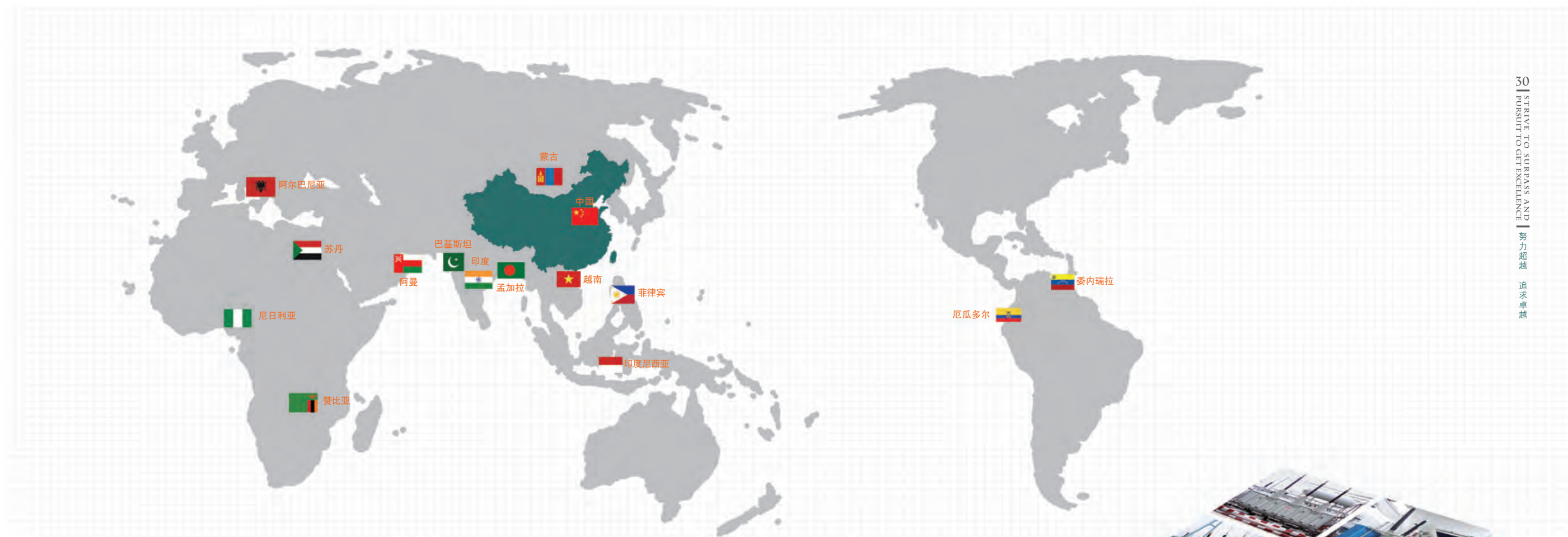
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Shandong Power Equipment Co., Ltd.

MARKET DISTRIBUTION

市场分布

SPECO



全球市场 Global Marketing

截止2012年底，公司共售出500余台110kV电力变压器，800余台220kV电力变压器，40余台330kV电力变压器，100余台400kV电力变压器，80余台500kV电力变压器，20余台750kV电力变压器，6台1000kV电力变压器和2台换流变压器。

公司产品遍及全国26个省、市、自治区，并成功出口至印度、尼日利亚、孟加拉、巴基斯坦、印度尼西亚、越南、阿尔巴尼亚、阿曼、委内瑞拉、厄瓜多尔、苏丹、埃及、赞比亚等国家，累计出口变压器300余台，容量超过4600万千伏安。

By the end of 2012, the company has sold over 500 sets of 110kV power transformers, over 800 sets of 220kV power transformers, over 40 sets of 330kV power transformers, over 100 sets of 400kV power transformers, over 80 sets of 500kV power transformers, 20 sets of 750 kV power transformers, 6 sets of 1000kV power transformers and 2 sets of converter transformers.

The products have been supplied to more than 26 provinces, cities, autonomous regions in China and also been exported to foreign countries such as India, Bangladesh, Pakistan, Indonesia, Vietnam, Oman, Albania, Sudan, Nigeria, Venezuela, Ecuador, Zambia and etc, total export transformers are more than 300 sets with capacity of over 46 million kVA.





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Shandong Power Equipment Co., Ltd.

INTERNATIONAL FOOTPRINTS

海外市场



2003年，开始进军海外市场。

2004年，首次进入印度市场。

2005年，成功进入尼日利亚市场，成为中国首家进入330kV电力变压器国际市场的企业。

2006年，成功签订印度加苏古达电厂20多台400kV电力变压器，创造了企业历史上单笔签订台数最多、价值最高的纪录。

2007年，成功进入印度尼西亚、巴基斯坦市场。

2008年，成功进入蒙古市场。

2009年，成功进入越南市场和阿尔巴尼亚市场。

2010年，成功进入阿曼市场。

2011年，成功进入苏丹、委内瑞拉、孟加拉市场。

2012年，成功进入厄瓜多尔、赞比亚、菲律宾市场。

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SPECO

In 2003, SPECO set foot on overseas market.

In 2004, SPECO entered into Indian market for the first time.

In 2005, SPECO succeeded in entering into Nigerian market, becoming the first enterprise of China into international market in terms of 330kV power transformer.

In 2006, SPECO successfully signed an order with Indian Jharsuguda Power Plant to supply more than 20 sets of 400kV transformers, which is a most valuable contract in SPECO's history.

In 2007, SPECO successfully entered into Indonesia and Pakistan market.

In 2008, SPECO successfully entered into Mongolian market.

In 2009, SPECO successfully entered into the Vietnam and Albania market.

In 2010, SPECO successfully entered into Oman market.

In 2011, SPECO successfully entered into Sudan, Venezuela, Bangladesh market.

In 2012, SPECO successfully entered into Ecuador, Zambia, Philippines market.

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山东电力设备有限公司
Shandong Power Equipment Co., Ltd.

CUSTOMER SERVICE

客户服务

SPECO

追求卓越

Pursue Excellent

公司奉行“努力超越 追求卓越”的企业精神，成立市场管理部、海外事业部、客户服务部，负责国内与国外的市场管理及客户服务工作。对市场及销售工作实行规范化管理，为用户提供超值服务。分别设立国内和国外售后服务专责人，随时处理用户反馈信息。根据用户不同需求，实行个性化服务。如客户需要，公司欢迎客户人员来厂，接受设备运行维护等技术培训。

SPECO has always been inheriting the enterprise theory that "strive to surpass and pursuit to get excellence", and set up Market Management Department, Overseas Business Department and Customer Service Department to provide services for national and international clients. These departments carry out standard management, offer over-value services for the customers. There are specific persons in charge of national and international after-sales service to deal with the feedbacks for the clients at any time. We also provide personalized service and give them relevant trainings on technical problems of equipment operation and maintenance.

服务真诚

Service Perfect

公司建立了用户定期回访制度，长期跟踪售出产品，主动征求客户意见，不断改进和提高产品质量，最大程度满足用户需求。建立客户管理系统，认真做好顾客反馈意见，通过售后服务记录和现代管理手段，收集服务信息，进一步提高售后服务质量。

SPECO has also set up a customer regular return visit system, tracing on the sold products, taking the initiative to gather clients' feedbacks, unceasingly improving and promoting product quality, in order to meet their needs in the maximum. In addition, we also set up client management system to take responsibility of customers' feedbacks, gathering service information through after-sales service records and modern management measures, further to improve the quality of after-sales service.





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山东电力设备有限公司
Shandong Power Equipment Co., Ltd.

QUALITY ASSURANCE

质量保证

SPECO



严格管理 Strict Management

为了提高质量管理水平，进一步完善基础管理工作，建立健全企业的质量管理体系，1997年12月8日公司顺利通过了中质协质量保证中心ISO9001:1994质量保证体系认证，2003年5月通过了该中心的ISO9001:2000质量管理体系认证，2009年7月通过了ISO9001:2008质量管理体系换版认证，2011年9月通过了ISO14001:2004环境管理体系认证，2011年9月通过了GB/T 28001-2001职业健康安全管理体系认证。

公司积极推行全面质量管理，加大从市场研发、产品设计、制造加工、检验试验和售后服务等全过程的控制。经过14年的质量管理体系运行，全体员工质量意识不断增强，职能得到进一步强化，基础设施不断完善，产品质量稳步提高，顾客满意度和市场占有率呈上升趋势。同时，公司还拥有了一支较强专业水平的内审员队伍、质检员队伍以及技术骨干和生产骨干，为体系运行提供了有效的资源保障。

In order to improve the level of quality management, further improving the basic management work, setting up and improving the quality of enterprise management system, on December 8, 1997, the company passed QAC quality assurance center of ISO9001:1994 quality system authentication; in May, 2003, passed the center's ISO9001:2000 quality management system certification; in July, 2009, passed the edition change authentication of ISO9001:2008 quality management system; in September, 2011, passed through the ISO14001:2004 environmental management system certification; in September, 2011, passed through the GB/T 28001-2001 occupational health and safety management system certification.

The company actively promotes the overall quality management, enhances the whole process control from market research, product design, manufacturing, test and inspection to after sales service. After 14 years of quality management system operation, all the staff have strong senses of quality, workman skills get further strengthening; infrastructure has been continuously improved, product quality has risen steadily; customer satisfaction and market share is rising. At the same time, the company also has a strong professional of internal auditors team, a quality inspector team and technical and production backbones, providing effective resources guarantee for the system operation.