

60 年专业缔造
60 YEARS CREATE PROFESSIONAL

山东鲁能泰山电力设备有限公司

SHANDONG LUNENG MOUNT TAI ELECTRIC EQUIPMENT CO.,LTD

箱式变电站系列

Box-type Substation Series



山东鲁能泰山电力设备有限公司

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COMPANY PROFILE

>> 公司简介

山东鲁能泰山电力设备有限公司位于山东省泰安市泰山区，生产区占地30万平方米。是一个具有60多年专业生产经验，又富有朝气的新型高新技术企业。公司倾心致力于电力行业的新技术及新产品的研发与生产，拥有自己的产品研发中心及生产基地。公司产品遍布全国各地，涉及上千个多个行业领域，遍布全国34个省级行政区，并出口俄罗斯、印度、越南、南非、津巴布韦、赞比亚等三十多个国家，建立了完善系统的销售服务网络。

公司下设泰安泰山高压开关有限公司、山东泰山电工电器有限公司、泰安华能绝缘材料有限公司、山东鲁能电缆有限公司、山东鲁能干变分公司五个分子公司。

公司为国家变压器专业生产重点厂家、国家级“守合同、重信用”企业、高新技术企业、国家级企业技术中心、全国城乡电网建设与改造推荐目录企业、水电工程主要机电设备推荐厂家、山东省制造业单项冠军企业。产品被评为“国家质量检测合格—质量信得过产品”、“全国机械工业用户满意产品”、“山东省首台套技术装备及关键核心零部件生产企业”。

公司设计年生产能力6000万kVA，可生产750kV级及以下油浸式电力变压器、发电机变压器、电厂用高厂变、启备变、110kV级及以下干式变压器、铁路牵引变压器、整流变压器、电炉变压器、箱式变电站（美式、欧式）及其它特种变压器。产品的各项性能均优于国家标准，处于国内领先地位。公司可根据用户的特殊要求，设计生产满足用户要求的定制产品。

公司拥有专业的技术研发团队，能自主开发研制技术先进、性能优良的产品，最大程度地满足了用电领域的市场需求，受到了广大用户的好评。公司建立了完善的技术体系并有效运行，技术中心拥有专利58项，创新成果21项，拥有“国家认定企业技术中心”、“国家火炬计划高新技术企业”、“山东省超高压变压器工程技术研究中心”等称号。

产品研发及应用平台有CAD、CAM、Pro/E、INFOLYTICA三维及电磁分析软件，技术中心扩建了“计算机综合设计系统”，推广应用了ERP、PDM、PACC、PLM，效果显著。



公司于2000年通过了ISO9001质量保证体系认证，2002年通过ISO10012计量保证确认体系认证，2004年通过ISO14001环境管理体系认证，2006年通过电能（北京）产品认证中心PCCC产品认证。公司建立健全了包括“信息流、人才流、资源流、物资流”在内的内部控制系统，确立了符合时代要求的现代化企业管理模式。

面对新的形势，山东鲁能泰山电力设备有限公司将持续依托优良精湛的技术工艺水平，借助广阔的市场平台，将公司产品向更深更广的领域渗透，实现公司长足长远发展，为我国电力事业的进步贡献力量！

COMPANY STRENGTH

>> 公司实力

- ◎ 国家变压器专业生产重点厂家
- ◎ 国家级“守合同、重信用”企业
- ◎ 国家认定企业技术中心、高新技术企业
- ◎ 全国城乡电网建设与改造推荐目录企业
- ◎ 国家水电工程主要机电设备推荐厂家
- ◎ 产品被评为“国家质量检测合格—质量信得过产品”
- ◎ 全国机械工业用户满意产品
- ◎ 产品通过“电能（北京）节能产品认证”

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COMPANY PROFILE

>> 公司简介

Shandong Luneng Mount Tai Electric Equipment Co., Ltd is located in east of hi-tech Development Zone, Tai'an City, Shandong Province and occupying the area of 300,000m². The company has 60 years with professional experience in production and full of vigor and vitality. Company focused on the power industry's new technology and new product development and production have their own product research and development centers and production base. Company products are sold throughout the country, involving a number of industry sectors, and exports of India, Russia, Zimbabwe, Vietnam, South Africa, Zambia, more than 30 countries, establish a perfect system of sales service network.

The company has five subsidiary companies; they are Taian Taishan High Voltage Switchgear Co., Ltd., Shandong Taishan Electrical Appliance Co., Ltd., Taian Huaneng Insulation Material Co., Ltd., Shandong Luneng Cable Co., Ltd., Shandong Luneng Dry-type Transformers subsidiary company.

The company is the national transformer specializing in the production of key manufacturers, national enterprises of "keep contracts regard credit", hi-tech enterprises, state-level enterprise technology center, the national urban and rural power grid construction and transformation recommended directory enterprises, hydropower engineering major mechanical and electrical equipment recommended manufacturers, Shandong Province Manufacturing Individual Industry Champion Enterprise. Products were rated as "National quality inspection qualified-quality trustworthy products", "National machinery industry customer satisfaction products", "Shandong Province First Set of Technical Equipment and Key Core Component Manufacturing Enterprise".

The company designed annual production capacity of 60 million KVA, can produce 750kV level and below oil-immersed power transformers, generator transformers, unit auxiliary transformer, stand-by transformer, 110kV level and below dry-type transformers, railway traction transformers, rectifier transformers, Electric furnace transformers, box-type substation (American, European) and other special transformers. The performance of the products is better than the national standard, in the domestic leading position. Companies can be based on the special requirements of users, design and production to meet user requirements of customized products.

The company has a professional R & D team, able to independently develop advanced technology, excellent performance of products, and the greatest extent to meet the electricity field needs of the market, by the majority of users of praise. The company has established a perfect technical system and effective operation. The technology center has 58 patents and 21 innovative achievements. It has "National Enterprise Technology Center", "National Torch Program High-tech Enterprise", and "Shandong Province UHV Transformer Engineering Technology Research Center".

Product development and application platforms are CAD, CAM, Pro / E, INFOLYTICA three-dimensional and electromagnetic analysis software, and our technology center established the "computer integrated design system", what's more, the effect of promoting the use of ERP, PDM, PACC, PLM is remarkable.



In 2000 the company passed the ISO9001 quality assurance system certification; in 2002 passed ISO10012 measurement assurance to confirm the system certification; in 2004 passed the ISO14001 environmental management system certification; in 2006 passed the power (Beijing) Product Certification Center PCCC product certification. The Company has established a perfect internal control system including "information, talent, resource and material", and established a modern enterprise management mode that meets the requirements of the times.

Facing the new situation, Shandong Luneng Mounttai Electric Equipment Co., Ltd will continue to rely on the superb technical level of technology. With a broad market platform, the company's products permeate to a deeper and deeper areas, contribute to the rapid development of the company for China's power industry!

COMPANY STRENGTH

>> 公司实力

- ◎ National transformer specializing in the production of key manufacturers
- ◎ National "keep contracts regard credits" enterprise
- ◎ National identified enterprise technology center, high-tech enterprises
- ◎ National urban and rural power grid construction and transformation of the recommended directory enterprise
- ◎ National hydropower project recommended mechanical and electrical equipment manufacturers
- ◎ Products were rated as "National quality inspection qualified - quality trustworthy products"
- ◎ National machinery industry customer satisfaction products
- ◎ Products through the "Energy (Beijing) energy-saving product certification"

企业资质证书

Enterprise Qualification Certificate



企业资质证书

Enterprise Qualification Certificate



企业资质证书

》》 Enterprise Qualification Certificate



企业资质证书

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企业资质证书

>> Enterprise Qualification Certificate

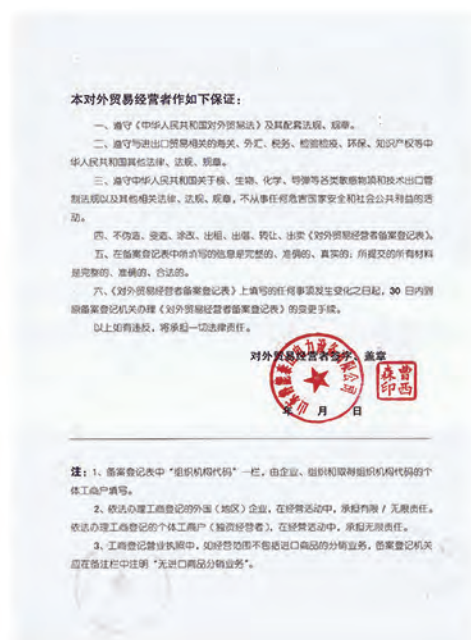


企业资质证书

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企业技术荣誉

>> Enterprise Technology Honor Certificate



企业技术荣誉

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>> Enterprise Technology Honor Certificate



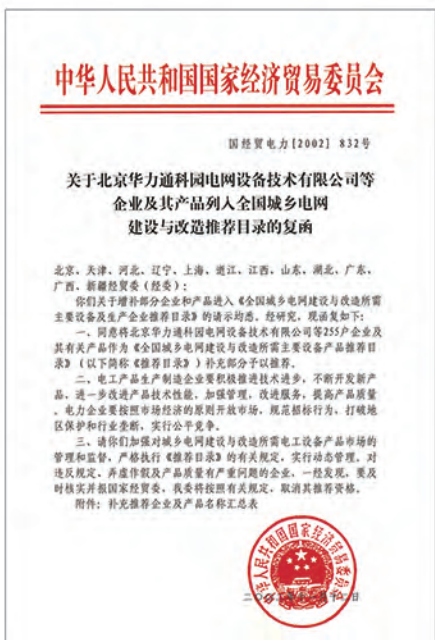
企业技术荣誉

>> Enterprise Technology Honor Certificate



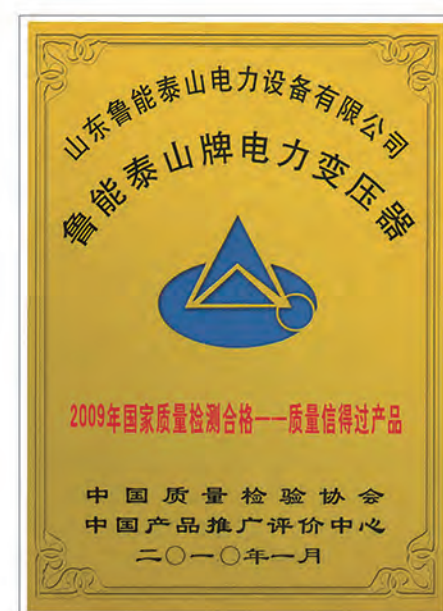
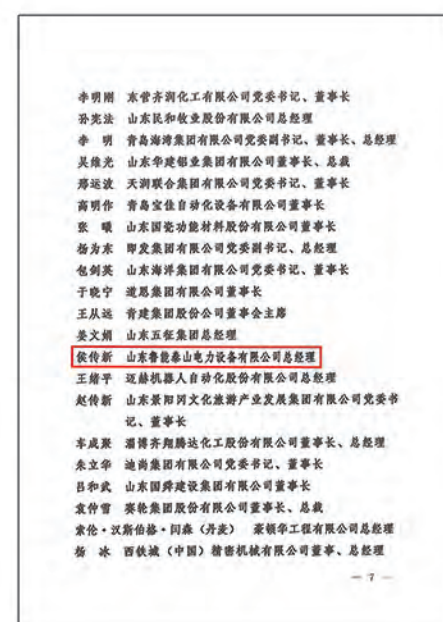
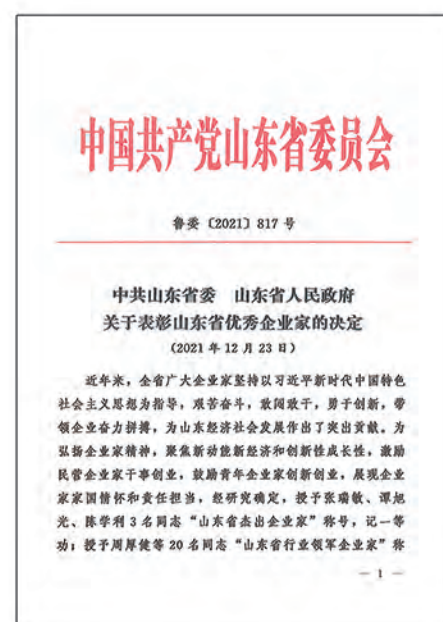
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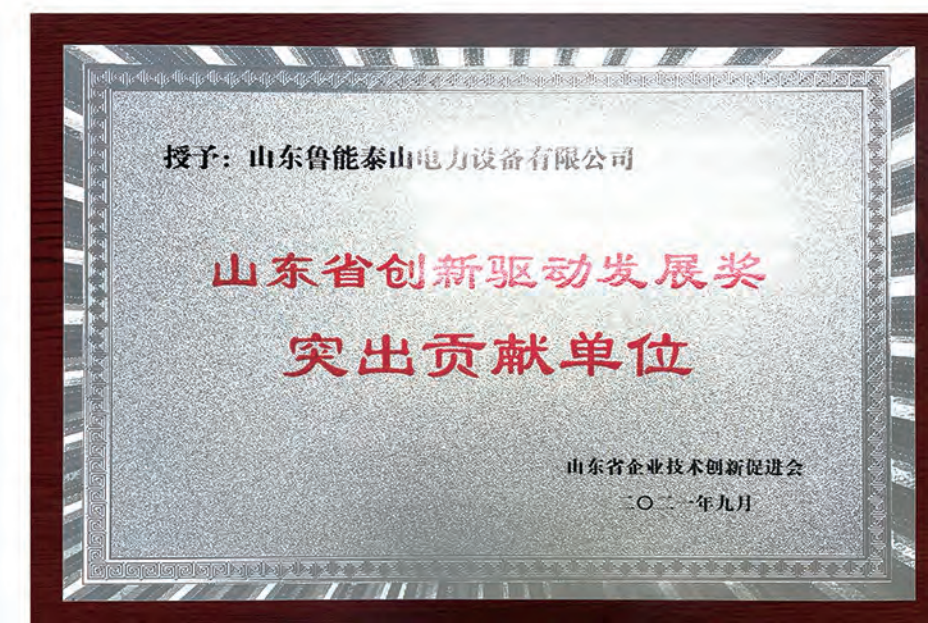
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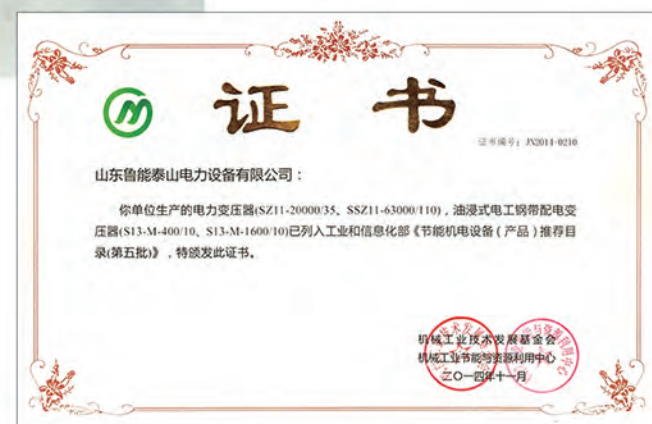
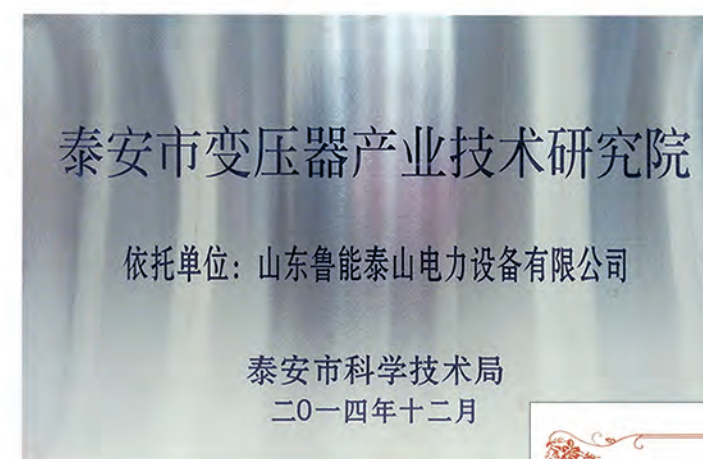
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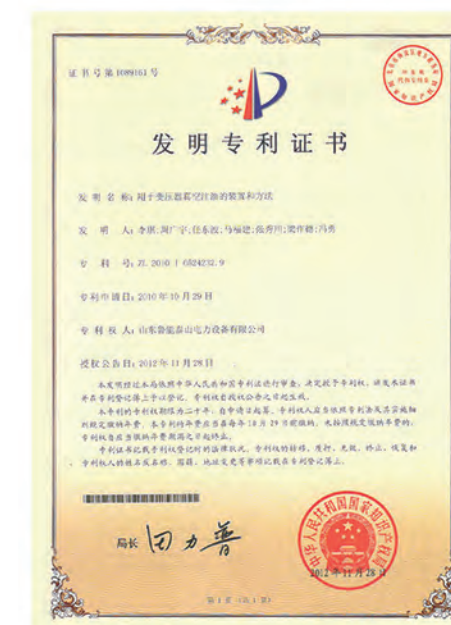
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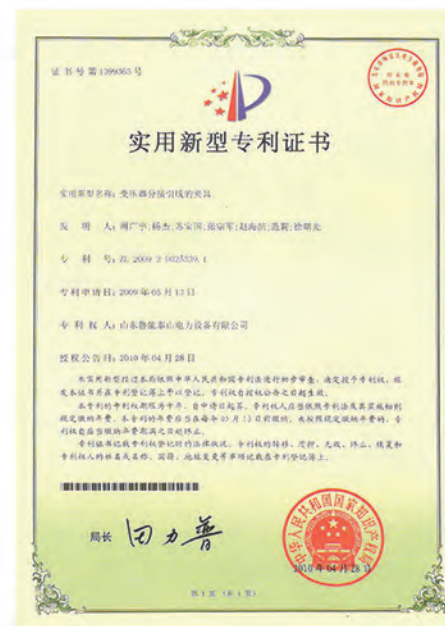
企业专利证书

>> Enterprise Patent Certificate



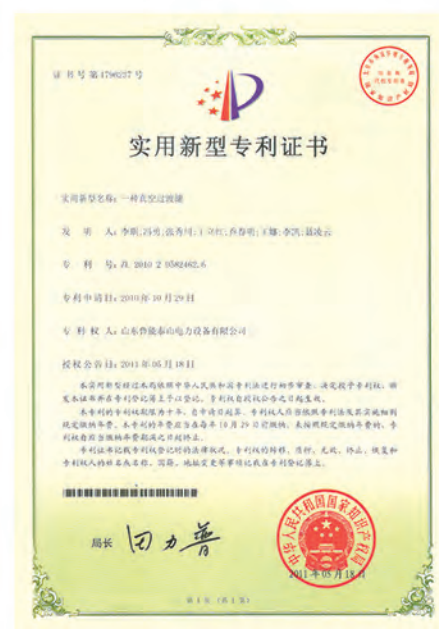
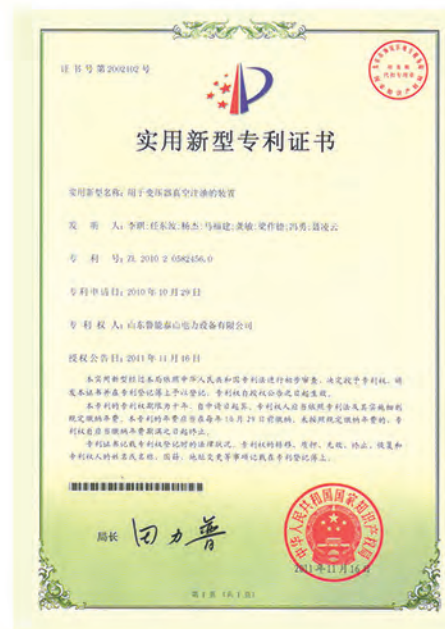
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>> Enterprise Patent Certificate



试验报告

>> Test Report

MA 170008221380

实验室名称: 苏州电器科学研究院股份有限公司
国家电器产品质量检验检测中心
Lab Name: Suzhou Electrical Apparatus Science Research Institute Co., Ltd.
China National Center for Quality Inspection and Test of Electrical Apparatus Products

No. 22N1637-S

型式试验报告
Type Test Report

委托单位: 山东鲁能泰山电力设备有限公司
Client:

产品名称: 电力变压器
Name of Product:

产品型号: S20-8000/35-XX1
Product Type:

检验类别: 型式试验
Test Category:

本实验室对出具的检验(试验)结果负责, 未经实验室书面同意, 不得部分地复制本报告。
The laboratory is responsible for the inspection (Test) results. The report shall not be reproduced except in full, written approval of the laboratory.

MA 170008221380

型式试验合格证书

试验报告编号: ZDN1637-S

证书编号: 20220837

生产单位: 山东鲁能泰山电力设备有限公司

样品名称: 电力变压器

样品型号: S20-8000/35-XX2

样品序号: LX202207657

试验项目: 例行试验、型式试验(含绕组热点温升计算)、绝缘配合计算、绝缘配合试验(工频)、三侧交流耐压试验、空载电流损耗测量、交流电压互感器空载电流试验、交流电压互感器耐压试验、短路承受能力试验

试验依据: GB/T1094.1-2013, GB/T1094.2-2013, GB/T1094.3-2017, GB/T1094.5-2008, GB/T1094.10-2013, GB/T5431-2010, GB/T7731-2017, JB/T10988-2019, GB20912-2019及试验委托单

试验结论: S20-8000/35-XX2 电力变压器例行试验、型式试验(含绕组热点温升计算)、绝缘配合计算、绝缘配合试验(工频)、三侧交流耐压试验、空载电流损耗测量、交流电压互感器空载电流试验、交流电压互感器耐压试验、短路承受能力试验均符合标准要求, 试验合格并颁发试验合格证书。样品上试验合格。

发证日期: 2022.08.31

试验员: 王明

审核员: 王明

批准人: 王明

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邮编: 215106 电话: 0512-68552287 0512-68552291 0512-68552292 0512-68552293 0512-68552294 0512-68552295 0512-68552296 0512-68552297 0512-68552298 0512-68552299 0512-68552300 0512-68552301 0512-68552302 0512-68552303 0512-68552304 0512-68552305 0512-68552306 0512-68552307 0512-68552308 0512-68552309 0512-68552310 0512-68552311 0512-68552312 0512-68552313 0512-68552314 0512-68552315 0512-68552316 0512-68552317 0512-68552318 0512-68552319 0512-68552320 0512-68552321 0512-68552322 0512-68552323 0512-68552324 0512-68552325 0512-68552326 0512-68552327 0512-68552328 0512-68552329 0512-68552330 0512-68552331 0512-68552332 0512-68552333 0512-68552334 0512-68552335 0512-68552336 0512-68552337 0512-68552338 0512-68552339 0512-68552340 0512-68552341 0512-68552342 0512-68552343 0512-68552344 0512-68552345 0512-68552346 0512-68552347 0512-68552348 0512-68552349 0512-68552350 0512-68552351 0512-68552352 0512-68552353 0512-68552354 0512-68552355 0512-68552356 0512-68552357 0512-68552358 0512-68552359 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试验报告

>> Test Report

Form 1: Type Test Report (型式试验报告) for a high/low voltage switchgear. It includes laboratory information (NEIC, MA, CNAS), product details (C8W-40.5/0.49-5500), and test results (合格). The report is signed by the laboratory and the client.

试验报告

>> Test Report

Form 2: Test Report (检验报告) for a high/low voltage switchgear. It includes laboratory information (NEIC, MA, CNAS), product details (C8W-40.5/0.49-5500), and test results (合格). The report is signed by the laboratory and the client.

Form 3: Test Report (检验报告) for a high/low voltage switchgear. It includes laboratory information (NEIC, MA, CNAS), product details (C8W-40.5/0.49-5500), and test results (合格). The report is signed by the laboratory and the client.

Form 4: Test Report (检验报告) for a high/low voltage switchgear. It includes laboratory information (NEIC, MA, CNAS), product details (C8W-40.5/0.49-5500), and test results (合格). The report is signed by the laboratory and the client.

Form 5: Test Report (检验报告) for a high/low voltage switchgear. It includes laboratory information (NEIC, MA, CNAS), product details (C8W-40.5/0.49-5500), and test results (合格). The report is signed by the laboratory and the client.

Form 6: Test Report (检验报告) for a high/low voltage switchgear. It includes laboratory information (NEIC, MA, CNAS), product details (C8W-40.5/0.49-5500), and test results (合格). The report is signed by the laboratory and the client.

试验报告

› › Test Report

CK-F-01

国家质量监督检验检疫中心

沈阳宸阳机器院股份有限公司沈阳宸阳实验室

检 验 报 告

CTQC

№: CTQC-01-032		第 2 页	
样品名称	动力总成	企业标准号	SZ1-20000951
		确认代码	SZ1-20000951
送样单位	山东鲁能泰山电力设备有限公司	检验类别	委托检验
生产单位	山东鲁能泰山电力设备有限公司	报告日期	2013 年 01 月 16 日
生产单位地址	山东省临沂市兰山区	编号/出厂日期	130-0086
检验依据	GB1984-1-1996 GB1984-2-1996 GB1984-3-2001 GB1984-5-2009 GB17441-2004 技术协议/合同	检验项目	例行试验 密封试验 小电流额定 二极臂弯曲力矩抗扭试验 二极臂弯曲力矩抗扭试验 抗电冲击试验 绝缘老化试验
	注：本试验（序号：SZ1-20000951）为型式试验、例行试验、机械试验、电气试验、热工试验、密封试验、小电流额定试验、抗电冲击试验、二极臂弯曲力矩抗扭试验及老化试验等试验项目。试验由本公司（山东）负责。样品上试验的试验结果以发往中国检验检疫科学研究院（本部）公司（山东）为准。样品上试验的试验结果以		
特别约定			
备注			






检测：1. 例行试验 2. 密封试验 3. 小电流额定 4. 二极臂弯曲力矩抗扭试验 5. 二极臂弯曲力矩抗扭试验 6. 抗电冲击试验 7. 绝缘老化试验
 报告人：张杰 3. 例行试验 4. 密封试验 5. 二极臂弯曲力矩抗扭试验 6. 二极臂弯曲力矩抗扭试验 7. 抗电冲击试验 8. 绝缘老化试验
 审核人：张杰 3. 例行试验 4. 密封试验 5. 二极臂弯曲力矩抗扭试验 6. 二极臂弯曲力矩抗扭试验 7. 抗电冲击试验 8. 绝缘老化试验

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[illegible]

> > Test Report

		No. AV51009-2016	
国家节能产品质量监督检验中心 National Supervision and Inspection Center for Energy-saving Product Quality 检验报告 Test Report			
		第 2 页 共 2 页	
样品名称 Sample	三相式变压器	检验类型 Test kind	委托检验
送检单位 Client	山东鲁能电力设备有限公司	型号规格 Model, Size	ZGS11-Z-4-120MVA
生产厂家 Manufacturer	山东鲁能电力设备有限公司	样品来源 Source	合同品
送检产地/地区 Address of Client	山东省潍坊市东丽区(前名人村东鲁)	检 标	/
检验目的 Sampling Purpose	/	操作人员 Operator	杨自国
检验标准 Inspection Standard	/	检验日期 Check Date	2016-03-27
样品数量 Sample Quantity	1 台	生产日期 Production Date	2014-03
样品名称/备注 Sample Name/Remark	能效提升	样品编号 Sample No.	LTID-163-0176
检验报告编号 Inspection Report No.	见委托书	检验日期 Check Date	2016-03-28 至 2016-04-01
Environmental Test			
GB19834-1.2013, GB19834.2-2013, GB19834.3-2013, GB19834.4-2013, GB19834.5-2013, GB19834.6-2013, GB19834.7-2013, GB19834.8-2013, GB19834.9-2013, GB19834.10-2013, GB19834.11-2013, GB19834.12-2013, GB19834.13-2013, GB19834.14-2013, GB19834.15-2013, GB19834.16-2013, GB19834.17-2013, GB19834.18-2013, GB19834.19-2013, GB19834.20-2013, GB19834.21-2013, GB19834.22-2013, GB19834.23-2013, GB19834.24-2013, GB19834.25-2013, GB19834.26-2013, GB19834.27-2013, GB19834.28-2013, GB19834.29-2013, GB19834.30-2013, GB19834.31-2013, GB19834.32-2013, GB19834.33-2013, GB19834.34-2013, GB19834.35-2013, GB19834.36-2013, GB19834.37-2013, GB19834.38-2013, GB19834.39-2013, GB19834.40-2013, GB19834.41-2013, GB19834.42-2013, GB19834.43-2013, GB19834.44-2013, GB19834.45-2013, GB19834.46-2013, GB19834.47-2013, GB19834.48-2013, GB19834.49-2013, GB19834.50-2013, GB19834.51-2013, GB19834.52-2013, GB19834.53-2013, GB19834.54-2013, GB19834.55-2013, GB19834.56-2013, GB19834.57-2013, GB19834.58-2013, GB19834.59-2013, GB19834.60-2013, GB19834.61-2013, GB19834.62-2013, GB19834.63-2013, GB19834.64-2013, GB19834.65-2013, GB19834.66-2013, GB19834.67-2013, GB19834.68-2013, GB19834.69-2013, GB19834.70-2013, GB19834.71-2013, GB19834.72-2013, GB19834.73-2013, GB19834.74-2013, GB19834.75-2013, GB19834.76-2013, GB19834.77-2013, GB19834.78-2013, GB19834.79-2013, GB19834.80-2013, GB19834.81-2013, GB19834.82-2013, GB19834.83-2013, GB19834.84-2013, GB19834.85-2013, GB19834.86-2013, GB19834.87-2013, GB19834.88-2013, GB19834.89-2013, GB19834.90-2013, GB19834.91-2013, GB19834.92-2013, GB19834.93-2013, GB19834.94-2013, GB19834.95-2013, GB19834.96-2013, GB19834.97-2013, GB19834.98-2013, GB19834.99-2013, GB19834.100-2013, GB19834.101-2013, GB19834.102-2013, GB19834.103-2013, GB19834.104-2013, GB19834.105-2013, GB19834.106-2013, GB19834.107-2013, GB19834.108-2013, GB19834.109-2013, GB19834.110-2013, GB19834.111-2013, GB19834.112-2013, GB19834.113-2013, GB19834.114-2013, GB19834.115-2013, GB19834.116-2013, GB19834.117-2013, GB19834.118-2013, GB19834.119-2013, GB19834.120-2013, GB19834.121-2013, GB19834.122-2013, GB19834.123-2013, GB19834.124-2013, GB19834.125-2013, GB19834.126-2013, GB19834.127-2013, GB19834.128-2013, GB19834.129-2013, GB19834.130-2013, GB19834.131-2013, GB19834.132-2013, GB19834.133-2013, GB19834.134-2013, GB19834.135-2013, GB19834.136-2013, GB19834.137-2013, GB19834.138-2013, GB19834.139-2013, GB19834.140-2013, GB19834.141-2013, GB19834.142-2013, GB19834.143-2013, GB19834.144-2013, GB19834.145-2013, GB19834.146-2013, GB19834.147-2013, GB19834.148-2013, GB19834.149-2013, GB19834.150-2013, GB19834.151-2013, GB19834.152-2013, GB19834.153-2013, GB19834.154-2013, GB19834.155-2013, GB19834.156-2013, GB19834.157-2013, GB19834.158-2013, GB19834.159-2013, GB19834.160-2013, GB19834.161-2013, GB19834.162-2013, GB19834.163-2013, GB19834.164-2013, GB19834.165-2013, GB19834.166-2013, GB19834.167-2013, GB19834.168-2013, GB19834.169-2013, GB19834.170-2013, GB19834.171-2013, GB19834.172-2013, GB19834.173-2013, GB19834.174-2013, GB19834.175-2013, GB19834.176-2013, GB19834.177-2013, GB19834.178-2013, GB19834.179-2013, GB19834.180-2013, GB19834.181-2013, GB19834.182-2013, GB19834.183-2013, GB19834.184-2013, GB19834.185-2013, GB19834.186-2013, GB19834.187-2013, GB19834.188-2013, GB19834.189-2013, GB19834.190-2013, GB19834.191-2013, GB19834.192-2013, GB19834.193-2013, GB19834.194-2013, GB19834.195-2013, GB19834.196-2013, GB19834.197-2013, GB19834.198-2013, GB19834.199-2013, GB19834.200-2013, GB19834.201-2013, GB19834.202-2013, GB19834.203-2013, GB19834.204-2013, GB19834.205-2013, GB19834.206-2013, GB19834.207-2013, GB19834.208-2013, GB19834.209-2013, GB19834.210-2013, GB19834.211-2013, GB19834.212-2013, GB19834.213-2013, GB19834.214-2013, GB19834.215-2013, GB19834.216-2013, GB19834.217-2013, GB19834.218-2013, GB19834.219-2013, GB19834.220-2013, GB1983			

中国电力科学研究院

电力工业电气设备质量检验检测中心

检 测 报 告



EETC2014QYJ030

一、委托单位：
山东鲁能泰山电力设备有限公司

二、试验说明：
名 称：西康式变压器
型号规格：GZB-40.5/22.5/1000
制 造 厂：山东鲁能泰山电力设备有限公司
制造日期：2014年03月
出厂日期：2014-06-17

三、检测标准及依据：
GB 7567-2010 高压/低压/西康式变压器
DL/T 537-2002 高压/低压/西康式变压器出厂试验导则

四、检测类型：
型式试验

五、检测日期：
2014-06-01—2014-06-05

六、检测结论：
根据 GB7567-2010、DL7537-2002 标准，经山东鲁能泰山电力设备有限公司 GZB-40.5/22.5/1000 西康式变压器进行了型式试验，型式试验项目合格。符合出厂标准。
专用章

检 测：	金 伟 青		
审 核：	姜爱武		
审 核：	孙 永 杰		
审 批：	康 伟 明		
签发日期：	2014-5-7		

<http://www.china-epri.com.cn> <http://www.epri-apc.com.cn>
第 1 页 共 14 页

> > Type Filing Certificate

申请备案企业:

型号备案证书

山东鲁能泰山电力设备有限公司

产品名称:

电力变压器

备案受理:

经审查以上产品符合变压器产品型号
备案管理办法的有关规定,特发此证。

报告编号: 21M0625-S

国家电器产品质量监督检验中心
苏州电器科学研究院股份有限公司

发证日期: 2021年7月9日

备 案 号	备案产品型号
DQJC-2021-10466	S22-M-30~125/10-NX1
	以下空白

证书查询网址: www.dqjc.com

证书查询网址: www.dqjc.com

型号备案证书

>> Type Filing Certificate

申请备案企业:

山东鲁能泰山电力设备有限公司

产品名称:

电力变压器

备案受理:

经审查以上产品符合变压器产品型号
备案管理办法的有关规定, 特发此证。

报告编号: 21M0627-S

国家电器产品质量监督检验中心
苏州电器科学研究院股份有限公司

发证日期: 2021年9月24日

证书查询网址: www.dqjc.com

型号备案证书

备 案 号	备案产品型号
DQJC-2021-11707	S22-M-160~500/10-NX1
	以下空白

证书查询网址: www.dqjc.com

申请备案企业:

山东鲁能泰山电力设备有限公司

产品名称:

电力变压器

备案受理:

经审查以上产品符合变压器产品型号
备案管理办法的有关规定, 特发此证。

报告编号: 22M1657-S

国家电器产品质量监督检验中心
苏州电器科学研究院股份有限公司

发证日期: 2022年8月11日

证书查询网址: www.dqjc.com

型号备案证书

备 案 号	备案产品型号
DQJC-2022-10409	S20-6300~10000/35-NX2
	以下空白

证书查询网址: www.dqjc.com

产品部分 >>>



35kV油浸式变压器

>> 35kV Oil - Immersed Transformer



产品特点 Characteristics

我公司生产的35kV级变压器8000kVA及以上容量是用110kV级产品技术，针对我国城乡电网特点自行研制开发的，其产品性能符合GB20052《电力变压器能效限定值及能效等级》，并符合GB/T6451《三相油浸式电力变压器技术参数和要求》，完成符合JB/T3837《变压器类产品型号编制办法》及GB1094《电力变压器》制造标准及国际电工委员会推荐标准IEC60076。

该产品主要有以下特点：

On the basis of digesting and absorbing the internal and external advanced technologies, according to the characteristics of urban and rural power grid in China, the company on itself develops and manufactures the 35kV class transformer 8000kVA or above capacity which adopt 110kV level product technology, Its product performance is in line with GB20052 "Power Transformer Energy Efficiency Limit Value and Energy Efficiency Grade", and its performance and index are not only superior to those specifications in GB / T6451 Three-phase Oil-immersed Power Transformer Technical Parameters and Requirements , also fully compliance with JB / T3837 transformer product model preparation method, GB1094 power transformer manufacturing standards and IEC60076 standard which recommended by International Electrotechnical Commission.

The product mainly has the following characteristics:

一、显著的节能效果 Remarkable Energy-Saving Effect

空载损耗比国家标准GB20052《电力变压器能效限定值及能效等级》平均下降5%，负载损耗下降了5%—10%。

Compared with the parameters in GB20052 "Power Transformer Energy Efficiency Limit Value and Energy Efficiency Grade", decreased by 5% on average, and the load loss reduces by 5%—10%.

二、变压器铁心 Transformer Core

铁心采用优质冷轧晶粒取向硅钢片，叠片为45°斜缝无孔绑扎结构。硅钢片由意大利引进的纵、横剪切线下料，剪切口毛刺不大于0.02mm。另外，先进的铁芯叠装翻转台、严格的叠装及不叠上铁轭工艺，充分保证了冷轧硅钢片的晶粒取向性，有效地降低了变压器的空载损耗。铁心底部用层压



木板逐级垫平，夹件结构采用板式夹件，降低了杂散损耗。铁轭夹紧采用了独特的夹紧绑扎工艺，充分保证了铁心的夹紧程度，同时，多年成熟的工艺，使铁心、拉板、支撑梁、垫脚成为一个牢固的整体，确保铁心片处在最佳受力状态。这样既降低了空载损耗，又大大降低了噪音。

The core applies high quality cold rolled grain oriented silicon steel sheet and the lamination 45°mitered joint holeless binding structure. The silicon steel is cut by slitting line and cut-to-length line imported from Italy. The burr at the edge is less than 0.02 mm. Additionally the advanced core assembly tilting platform and the strict assembly techniques with upper yoke non-pre-stacked ensure the grain orientation of the cold rolled silicon steel and reduce the no-load loss effectively. The bottom of the core is flat by laminated wood and plate type clamping structure reduces the stray loss. The use of unique clamping binding technique in core yoke ensures the clamping degree of core. Meanwhile, the well-rounded craft makes sure that the core, drawplate, supporting beam and foot pad to be a firm unit and that the core is under the optimal pressure state, which reduces the no-load loss as well as noise.

三、变压器绕组 Transformer Winding

高、低压绕组均绕制在高强度的绝缘筒上，高压绕组由优质的无氧铜杆拉制的导线绕制而成，这样大大降低了导线的涡流损耗和环流损耗，提高了变压器的抗短路强度。所有绕组内侧均有辅助撑条（即加强撑条），外侧均有锁撑条，绕组的幅向紧固采用“0”裕度设计，因而极大地增强了绕组的机械强度和抗短路能力。高、低压绕组内部均设有油导向结构，从而降低了绕组最热点温升，延长了使用寿命。

All transformer winding are wound on high insulation cylinder. The HV winding are wound by wires drawing from high-quality oxygen-free copper rods which reduces the eddy loss and circular current loss and increases the transformer short-circuit withstand ability. There are auxiliary strips (i.e. reinforcing strips) inside all the winding and lockable strip outside. The radial clamp of winding is designed with "0" tolerance that greatly enhances the mechanical strength and short-circuit withstand ability of winding. In addition, all winding are arranged with oil ducts which reduce the winding hot spot temperature rise and prolong their service lives.

四、器身绝缘 Active Part Insulation

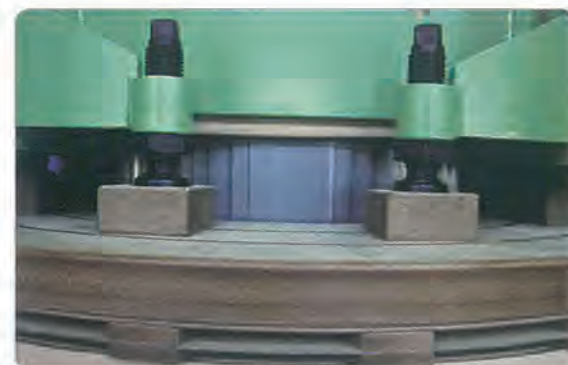
变压器器身装配和绕组绕制均在全封闭的净化车间内完成，达到制造500kV产品的清洁度要求和器身恒温要求，进一步保证了器身的清洁度和干燥度。同时采用煤油汽相干燥设备，使产品的清洁度效果更佳。器身下部托板、上部压板全部采用了机械强度高、电气性能好的电工层压木板，变压器所用的撑条、垫块等均经过两次密压处理和倒圆工艺，使内部各电场均匀。钢夹件和钢压钉有足够的强度，与压板接触的压碗接触面设计到



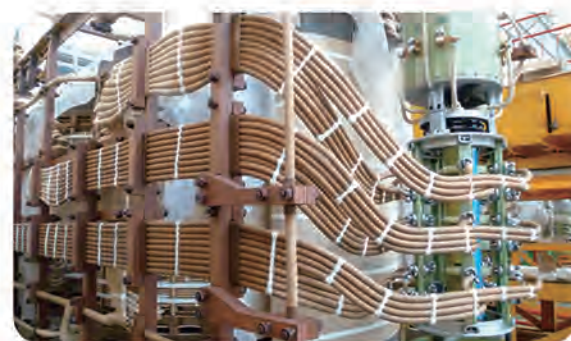
35kV油浸式变压器 35kV Oil - Immersed Transformer

>> 产品特点 Characteristics

最大，并且支撑垫块、撑条、压钉的布置，尽可能使绕组受力相对均衡，提高了器身的整体稳定性。调节各绕组同心度使磁中心一致，充分保证了各线圈电抗高度相等，使各绕组受力均匀，从而提高各绕组的抗短路能力。另外，下夹件与下节油箱采用了钢性定位，通过真空干燥的木垫块或反压钉调节锁定，因此器身在油箱中能经受住各种运输条件下的冲击考验和运行中的轴向电动力而不致移位，器身与下节油箱之间加橡胶垫，以减少噪音水平。



The active part assembly and coil winding are carried out in a fully sealed, constant temperature which meets the cleanness and constant humidity requirements for manufacturing 500kV power transformer to further ensure the cleanness and dryness of the active part. At the same time, the large kerosene vapor-phase drying device is applied to improve the cleanness. The lower supporting plate and upper pressing plate of active part adopt electric laminating paperboard with high mechanical strength and outstanding electric performance. All strips and blocks will be subjected to sealing pressure treatment twice and the process of rounding to make the electric fields inside uniform. The steel clamps and steel pressing nails have sufficient strength and the pressing nail bowl contact surface with the platen is designed to the maximum to support the blocks, strips and pressing nails, to balance the force on winding and improve the stability of active part. Adjust the concentricity of each winding in the consistent magnetic center to fully guarantee the coil reactance height equal and the winding force evenly, so as to improve the anti-short-circuit capacity of each winding. In addition, the lower clamp and the lower oil tank with a steel positioning, through the vacuum drying wooden block or anti-pressure nail adjust lock, so the active part in the tank can withstand a variety of transport conditions under the impact test and running axial electromotive force without displacement. Between the active part and the lower oil tank add rubber pad to reduce the noise level.



五、引线部分 Leads

合理布置高压分接引线，保证引线美观又具有足够的机械强度和电气强度，引线连结使用冷压焊接工艺，采用了屏蔽措施，低压引线铜排固定于铁芯夹件和下节油箱上平面，提高了引线的稳固性，线圈出头绑扎有先进的工艺保证，大大提高了低局放的要求。

35kV油浸式变压器 35kV Oil - Immersed Transformer

>> 产品特点 Characteristics

Reasonable layout of HV tapping leads to ensure an appearance leads with sufficient mechanical strength and electrical strength. Leads connection adopt cold pressure welding process and shielding measures. The LV lead copper bus bar is fixed on the upper surface between core clamp and lower tank, which improves the stability of the lead. The outlet of winding and welded part of lead will be subjected to roundness treatment which helps to improve the requirement of low partial discharge.

六、油箱 Tank

油箱结构型式为钟罩式（或桶式）。钟罩式油箱采用大型折板机一次瓦楞成型，取消了各种加强铁、加强板，既大大提高了油箱的机械强度，又减小了焊缝，扩大了本体散热面积，提高了散热效果；同时瓦楞形箱壁有发散效应，从而起到了降低噪音的作用，对油箱密封部分进行特殊加工，并对箱体进行整体喷丸，彻底清除箱体及加工中产生的尖角、毛刺、焊渣，提高了油漆的附着力，使外观质量既美观又持久。散热器和组件模拟现场运行的恶劣环境条件进行试验和检测，有效地保证渗漏点的消除，所有法兰面均进行精加工，并有开槽、限位结构，同时采用耐油、耐气候、耐臭氧的优质丁腈橡胶密封垫，从而防止了变压器的渗漏。上、下节油箱也可以根据客户需要采用焊死密封。



The tank applies bell-type structure (or barrel type) which is produced by a large folding machine with a corrugated molding to abolish a variety of iron stiffener, reinforced board. Such process both greatly improve the mechanical strength of the tank, also reduces the weld, expanding the body cooling area for obvious cooling effect. At the same time, corrugated tank wall divergence effect, which played a role in reducing noise. Special machining will be done on sealed parts of tank, and the short-blast treatment will be conducted on tank body in order to clear away the oxide skin of surface and the sharp angles, burrs, and welding residues generated during machining. The mixed paint with high performance is adopted to enhance the adhesiveness of paint film and make it good-looking and everlasting. The coolers and components are tested by simulating the prevailing atrocious environmental conditions on site to guarantee the elimination of leakages. All flanges are machined precisely and equipped with notch and position-limiting structure. Meanwhile, the process of oil-resistant, weather-proof, ozone-resistant, well-qualified dingnan rubber gasket is adopted to avoid leakages. In addition, according the client's requirements, the welding sealed tank can be adopted between upper tank and lower tank.

35kV油浸式变压器

>> 35kV Oil - Immersed Transformer

七、冷却和附属装置 Cooler and Auxiliary Devices

一般为风冷/自冷型，风机启动时满负荷运行，风机停运自然冷却时，负荷量可为满负荷的70%。片式散热器布置紧凑、合理，风机一般挂在片散上，水平或垂直方向吹风。储油柜为胶囊型，内装有耐油、气密的胶囊，充分保证了空气和油不接触，实现了全密封，另外也可采用不锈钢材料制成的膨胀式储油柜，具有免维护、运行可靠的特点。



Generally, the transformer is designed with ONAF / ONAN. When the fan motor starts, the transformer is operated under the state of full load; when the fan motor stops for natural cooling, the load can be 70% of full load. The panel type radiator will be compactly and properly arranged with fan motor fixed on bracket keeping horizontal or vertical direction cooling. The conservator will be rubber bladder type with oil-resistant, airtight rubber bladder installed inside, which ensures that the air and oil don't contact directly and realizes the complete sealing. Besides, the expansion type conservator made of stainless steel which has the characteristics of free of maintenance and reliable operation.

总之，我公司依靠科技进步，建立了完善的管理体系，通过全体员工强烈的责任感和开拓进取精神以及卓有成效的工作，使公司产品始终保持低局放、低噪音、低损耗、高可靠性。

The product manufactured by our company has the characteristics of low partial discharge, low noise, low loss and high reliability, depending on the advancement of science and technology, having a sound management system, with the strong responsibilities of all working staffs and their pioneer spirit and highly effective work.

35kV级全封闭新型变压器

>> 35kV Complete- Sealed New Design Transformer

产品特点 Characteristics



该系列产品具有全封闭、免维修、免吊芯、低噪音、低损耗的突出特点。铁芯采用了无纬带与涂覆环氧树脂相配合夹持方式，减少了漏磁场中的钢结构件，从而降低了产品运行中杂散的损耗。线圈部分采用了调压线圈与主线圈分离设置的方式，提高了线圈的机械强度，减少了线圈的安匝不平衡率，提高了产品的抗短路能力。

器身绝缘部分的压板采用电工层压技术，钟罩式油箱采用钢板成型的瓦楞油箱，减少了重量，增大了机械强度和散热效果，上下节油箱采用焊死结构，提高了产品的密封性能，同时降低了噪音，避免了渗漏。

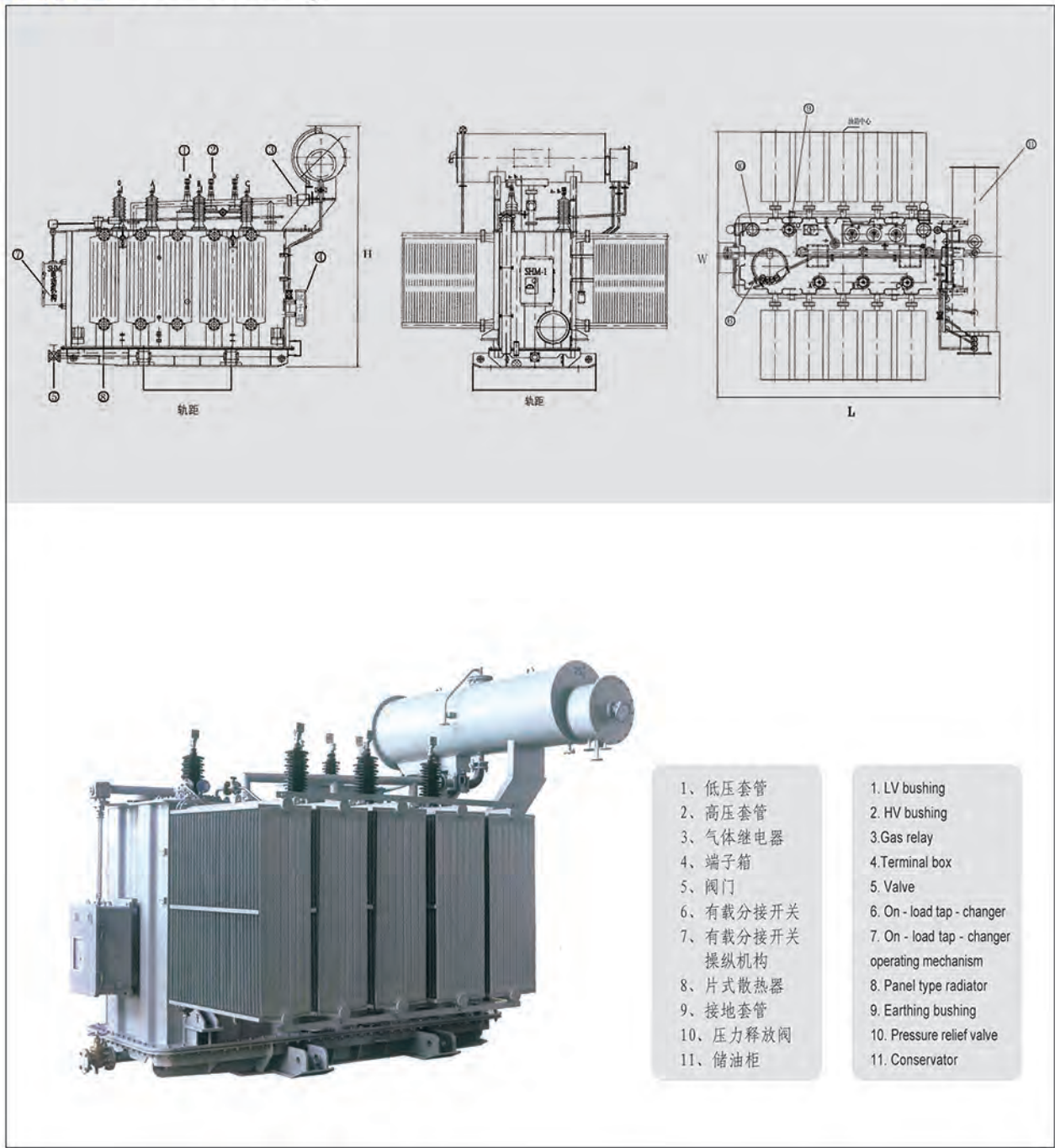
The series of products with complete sealed, maintenance-free, no hanging core, low noise, low loss outstanding features. The core adopts clamp craft which matches a non - weft belt and the coating epoxy resin together to reduce the leakage magnetic field in the steel structure, thereby reducing the product running stray losses. The coil adopts the way of separating the voltage regulating coil from the main coil, improving the mechanical strength, reducing the ampere-turn imbalance rate and improving the anti-short circuit capability of the coil.

The insulation of the active part uses electrical laminated technology. Bell-type tank with steel plate forming corrugated tank to reduce the weight and increase mechanical strength and cooling effect. Upper and lower tank with welding fixed structure which can improve the product sealing performance, while reduce the noise and avoid the leakage.

35kV油浸式变压器

>> 35kV Oil - Immersed Transformer

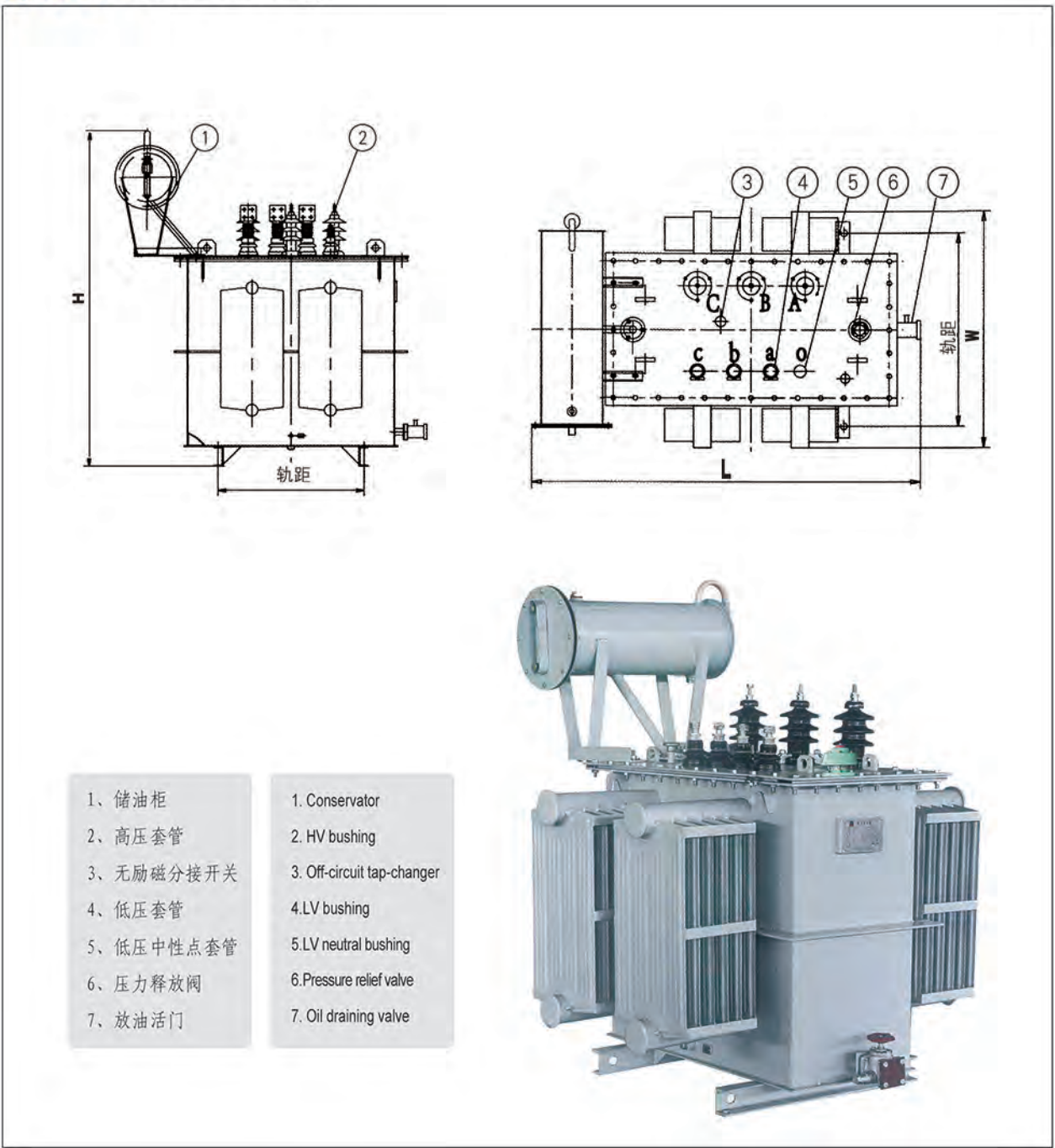
外形图 Outline drawing



10kV级油浸式变压器

>> 10kV Oil - Immersed Transformer

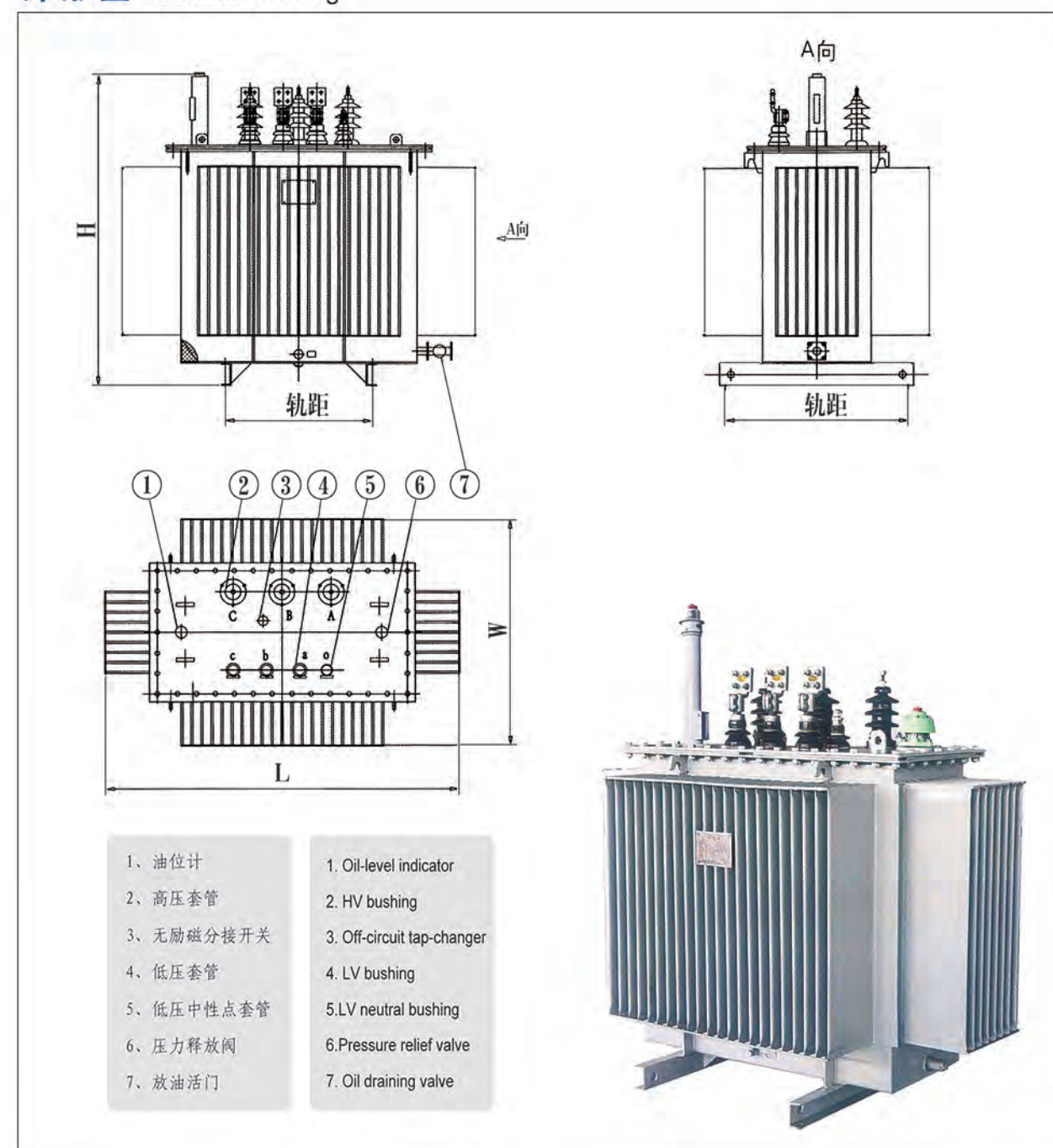
外形图 Outline drawing



10kV全密封油浸式变压器

>> 10kV Complete-Sealed Oil - Immersed Transformer

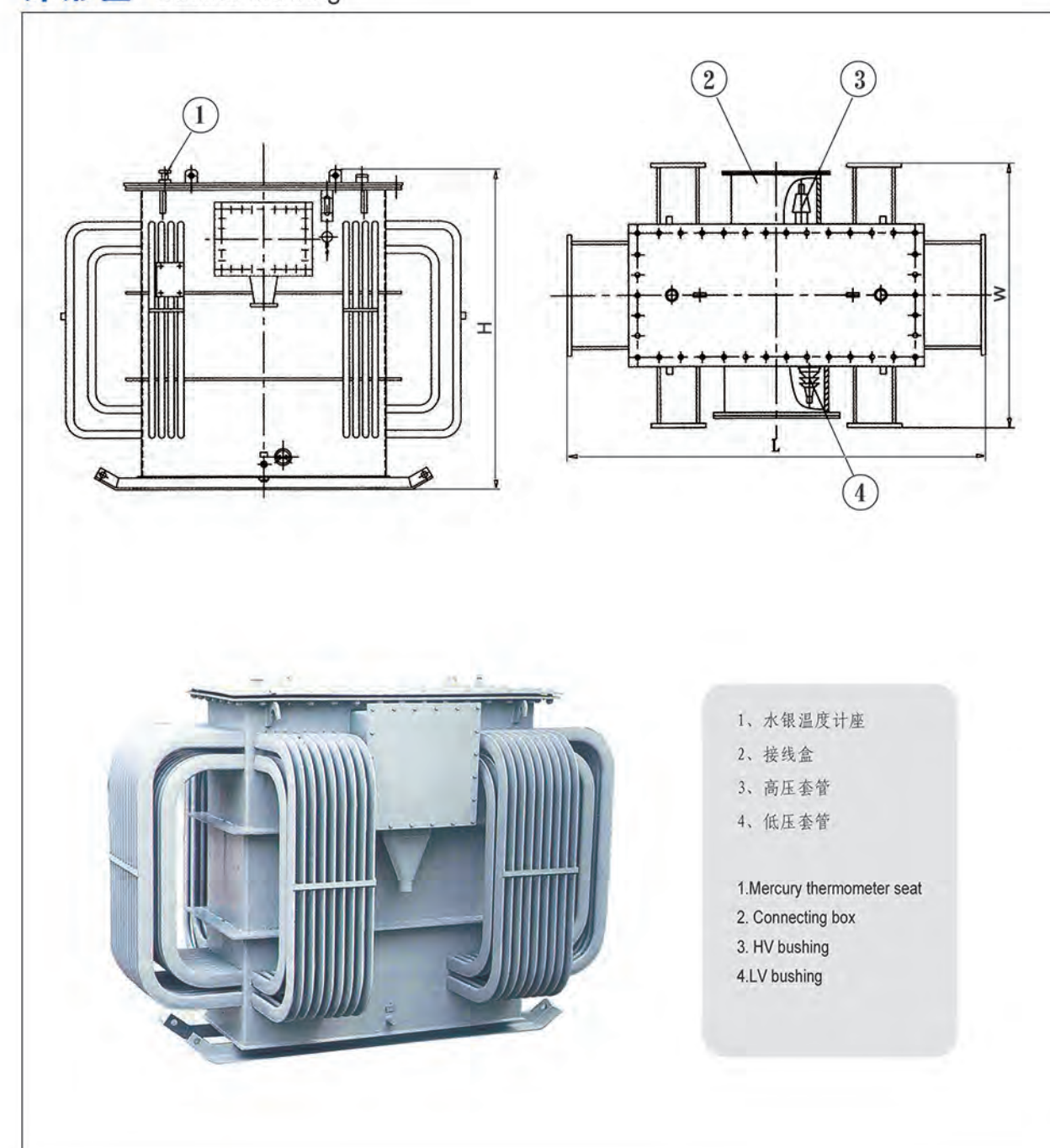
外形图 Outline drawing



矿用油浸式变压器

>> Mining Oil - Immersed Transformers

外形图 Outline drawing



SZ11型35kV有载调压电力变压器

>> SZ11 Series 35kV Power Transformer with OLTC

产品符合标准 The product meets the following standard:

GB1094. 1-2013 电力变压器第一部分 总则 Power transformer part 1 General

GB1094. 2-2013 电力变压器第二部分 升温 Power transformer part 2 Temperature rise

GB1094. 3-2017 电力变压器第三部分 绝缘水平和绝缘试验 Power transformer part 3 Insulation level and insulation test

GB1094. 5-2008 电力变压器第五部分 承受短路的能力 Power transformer part 5 Short-circuit withstand ability

技术参数 Technical parameters

额定容量 Rated Capacity (kVA)	电压组合 Voltage Combination			联接组 标号 Vector Group	空载损耗 No-load Loss (kW)	负载损耗 Load Loss (kW)	空载电流 No-load Current (%)	短路阻抗 Short-circuit Impedance (%)	重量Total Weight (kg)			尺寸Overall Dimension (mm)			
	高压 H.V. (kV)	高压分接 H.V.Tapping Range	低压 L.V. (kV)						器身 Active Part	油重 Oil Weight	总重 Total Weight	长 L	宽 W	高 H	轨距 Gauge
2000	35		6.3	Yd11	2.30	19.20	0.50	6.5	2620	1680	5750	3095	2285	2710	1070
2500			10.5		2.72	20.60	0.50		3695	2370	8070	3205	2500	2810	1070
3150	35~38.5		6.3~10.5	Yd11	2.60	23.50	0.50	7.0	3825	2455	8600	3695	2340	2920	1070
4000					3.10	27.60	0.50		4550	2450	9680	3250	2530	2950	1070
5000					3.70	32.50	0.50		6025	3215	12305	3565	2555	3200	1070
6300	±3×2.5%		6.3~10.5	YNd11	4.50	34.90	0.50	8.0	6800	2885	12610	3520	3050	3110	1475
8000					6.30	38.60	0.40		8050	3380	14515	3770	3250	3200	1475
10000					7.40	45.60	0.40		9670	3920	18300	4420	3290	3340	1475
12500					8.70	54.00	0.35		12310	4910	22110	4620	3730	3540	1475
16000					10.50	66.80	0.35		13185	5665	25200	4820	3790	3600	1475
20000					12.40	78.60	0.30		15800	5750	26200	5210	3840	3840	1475
25000					14.60	92.90	0.30		19800	7400	33100	5200	4000	4200	1475
31500					17.40	110.20	0.30	10	24670	9790	41980	5220	4210	4310	2040

注：1、可按用户要求提供轨距； 2、以上数据供选型参考，我公司保留修改的权利。

Notes:1.Our company can provide gauge according to client's requirements.

2.The parameters above are for reference only. Our company reserves the right of modification.

SFZ18型35kV有载调压风冷电力变压器

>> SFZ11 Series 35kV Air Cooling Power Transformer with OLTC

产品符合标准 The product meets the following standard:

GB1094. 1-2013 电力变压器第一部分 总则 Power transformer part 1 General

GB1094. 2-2013 电力变压器第二部分 升温 Power transformer part 2 Temperature rise

GB1094. 3-2017 电力变压器第三部分 绝缘水平和绝缘试验 Power transformer part 3 Insulation level and insulation test

GB1094. 5-2008 电力变压器第五部分 承受短路的能力 Power transformer part 5 Short-circuit withstand ability

技术参数 Technical parameters

额定容量 Rated Capacity (kVA)	电压组合 Voltage Combination			联接组 标号 Vector Group	空载损耗 No-load Loss (kW)	负载损耗 Load Loss (kW)	空载电流 No-load Current (%)	短路阻抗 Short-circuit Impedance (%)	重量Total Weight (kg)			尺寸Overall Dimension (mm)			
	高压 H.V. (kV)	高压分接 H.V.Tapping Range	低压 L.V. (kV)						器身 Active Part	油重 Oil Weight	总重 Total Weight	长 L	宽 W	高 H	轨距 Gauge
2000	35		6.3	Yd11	2.59	19.23	0.50	6.5	2620	1600	5650	3095	2100	2710	1070
2500			10.5		3.06	20.64	0.50		3670	2270	7900	3205	2400	2810	1070
3150	35~38.5		6.3~10.5	Yd11	2.60	23.50	0.50	7.0	3800	2350	8500	3695	2200	2920	1070
4000					3.10	27.60	0.50		4500	2355	9460	3250	2400	2950	1070
5000					3.70	32.50	0.50		5990	3105	12080	3565	2405	3200	1070
6300	±3×2.5%		6.3~10.5	YNd11	4.50	34.90	0.50	7.5	6650	3200	12400	3520	2960	3110	1475
8000					6.30	38.60	0.40		7860	3280	14200	3770	3140	3200	1475
10000					7.40	45.60	0.40		9450	3710	18100	4420	3160	3340	1475
12500					8.70	54.00	0.35	8.0	12120	4870	22000	4620	3630	3540	1475
16000					10.50	66.80	0.35		13000	5450	25000	4820	3610	3600	1475
20000					12.40	78.60	0.30		15500	5550	25800	5210	3310	3840	1475
25000					14.60	92.90	0.30		19200	7100	31150	5200	4000	3950	1475
31500					17.40	110.20	0.49		24560	9580	41880	5220	4100	4310	2040

注：1、可按用户要求提供轨距； 2、以上数据供选型参考，我公司保留修改的权利。

Notes:1.Our company can provide gauge according to client's requirements.

2.The parameters above are for reference only. Our company reserves the right of modification.

S18型35kV无励磁调压电力变压器

>> S11 Series 35kV Off-Circuit-Tap-Changing Power Transformer

产品符合标准 The product meets the following standard:

GB1094. 1-2013 电力变压器第一部分 总则 Power transformer part 1 General
GB1094. 2-2013 电力变压器第二部分 升温 Power transformer part 2 Temperature rise
GB1094. 3-2017 电力变压器第三部分 绝缘水平和绝缘试验 Power transformer part 3 Insulation level and insulation test
GB1094. 5-2008 电力变压器第五部分 承受短路的能力 Power transformer part 5 Short-circuit withstand ability

技术参数 Technical parameters

额定容量 Rated Capacity (kVA)	电压组合 Voltage Combination			联接组 标号 Vector Group	空载损耗 No-load Loss (kW)	负载损耗 Load Loss (kW)	空载电流 No-load Current (%)	短路阻抗 Short-circuit Impedance (%)	重量Total Weight (kg)			尺寸Overall Dimension (mm)			
	高压 H. V. (kV)	高压分接 H.V.Tapping Range	低压 L. V. (kV)						器身 Active Part	油重 Oil Weight	总重 Total Weight	长 L	宽 W	高 H	轨距 Gauge
2000	35~38.5	$\pm 2 \times 2.5\%$	3.3 3.5 6.3 6.6 10.5 11	Yd11	2.17	18.30	0.45	6.5	2750	1585	6090	2560	1780	2720	1070
2500					2.56	19.60	0.45		2930	1690	6830	2630	1790	3050	1070
3150					2.40	21.9	0.45	7.0	3470	2230	8850	2780	2880	2900	1070
4000					2.90	25.9	0.45		5130	2395	9720	2850	2980	3000	1070
5000					3.50	29.7	0.45	8	5710	2980	11680	3150	3490	3145	1070
6300					4.20	33.3	0.45		6820	3850	14080	3180	3540	3270	1070
8000				YNd11	5.80	36.5	0.35	8.0	7670	4230	18050	3540	3650	3550	1475
10000					7.00	43.0	0.35		9660	4670	18920	3630	3690	3600	1475
12500					8.00	51.1	0.30	8.0	10700	5360	24120	3750	3860	3680	1475
16000					9.70	62.5	0.30		12800	6850	29110	4480	3990	3705	1475
20000					11.50	75.5	0.30	10	15810	8075	33130	4630	4090	3850	1475
25000					13.60	89.3	0.25		18150	9730	37140	4930	4240	4195	1475
31500					16.20	106.4	0.25		19950	10890	42170	5180	4390	4350	2040
40000					27.21	135.00	0.27		28500	11760	43230	5250	4470	4435	2040

注：1、可按用户要求提供轨距； 2、以上数据供选型参考，我公司保留修改的权利。
Notes:1.Our company can provide gauge according to client's requirements.
2.The parameters above are for reference only. Our company reserves the right of modification.

SF10型35kV无励磁调压风冷电力变压器

>> SF10 Series 35kV Off-Circuit-Tap-Changing Power Transformer with ONAF

产品符合标准 The product meets the following standard:

GB1094. 1-1996 电力变压器第一部分 总则 Power transformer part 1 General
GB1094. 2-1996 电力变压器第二部分 升温 Power transformer part 2 Temperature rise
GB1094. 3-2003 电力变压器第三部分 绝缘水平和绝缘试验 Power transformer part 3 Insulation level and insulation test
GB1094. 5-2008 电力变压器第五部分 承受短路的能力 Power transformer part 5 Short-circuit withstand ability

技术参数 Technical parameters

额定容量 Rated Capacity (kVA)	电压组合 Voltage Combination			联接组 标号 Vector Group	空载损耗 No-load Loss (kW)	负载损耗 Load Loss (kW)	空载电流 No-load Current (%)	短路阻抗 Short-circuit Impedance (%)	重量Total Weight (kg)			尺寸Overall Dimension (mm)			
	高压 H. V. (kV)	高压分接 H.V.Tapping Range	低压 L. V. (kV)						器身 Active Part	油重 Oil Weight	总重 Total Weight	长 L	宽 W	高 H	轨距 Gauge
10000	35~38.5	$\pm 2 \times 2.5\%$	6.3 10.5 11	YNd11	9.79	45.31	0.43	7.5	9520	4620	18880	3630	3590	3700	1475
12500					11.34	53.86	0.42		10610	5340	24000	3750	3760	3705	1475
16000					13.68	65.83	0.41	8.0	12610	6750	28600	4480	3840	3765	1475
20000					16.20	79.51	0.40		15700	7985	33000	4630	3900	3850	1475
25000					19.15	94.05	0.34		18000	9650	36800	4930	4100	4195	1475
31500					22.75	112.86	0.32		19800	10790	42000	5180	4200	4350	2040
40000					27.21	135.00	0.27		28300	11660	43100	5250	4250	4435	2040

注：1、可按用户要求提供轨距； 2、以上数据供选型参考，我公司保留修改的权利。
Notes:1.Our company can provide gauge according to client's requirements.
2.The parameters above are for reference only. Our company reserves the right of modification.



S11型35kV无励磁调压配电变压器

>> S11 Series 35kV Off-Circuit-Tap-Changing Distribution Transformer

产品符合标准 The product meets the following standard:

GB1094.1-2013 电力变压器第一部分 总则 Power transformer part 1 General

GB1094.2-2013 电力变压器第二部分 升温 Power transformer part 2 Temperature rise

GB1094.3-2003 电力变压器第三部分 绝缘水平和绝缘试验 Power transformer part 3 Insulation level and insulation test

GB1094.5-2008 电力变压器第五部分 承受短路的能力 Power transformer part 5 Short-circuit withstand ability

技术参数 Technical parameters

额定容量 Rated Capacity (kVA)	电压组合 Voltage Combination			联接组 标号 Vector Group	空载损耗 No-load Loss (kW)	负载损耗 Load Loss (kW)	空载电流 No-load Current (%)	短路阻抗 Short-circuit Impedance (%)	重量Total Weight (kg)			尺寸Overall Dimension (mm)			
	高压 H.V. (kV)	高压分接 H.V.Tapping Range	低压 L.V. (kV)						器身 Active Part	油重 Oil Weight	总重 Total Weight	长 L	宽 W	高 H	轨距 Gauge
50	35	±5%	0.4	Dyn11 Yyn0	0.16	1.2/1.14	1.30	6.5	220	250	785	1070	830	1770	660
100					0.23	2.01/1.91	1.10		420	410	1100	1165	900	1870	
125					0.27	2.37/2.26	1.10		450	435	1245	1265	1080	1950	
160					0.28	2.82/2.68	1.00		650	465	1470	1310	1080	1970	
200					0.34	3.32/3.16	1.00		680	510	1510	1350	1100	1980	
250					0.40	4.75/4.53	0.95		720	540	1615	1400	1120	2040	
315					0.48	4.75/4.53	0.95		1010	565	2010	1640	1130	2080	
400					0.58	5.74/5.47	0.85		1055	620	2170	1720	1140	2120	820
500					0.68	6.91/6.58	0.85		1120	720	2565	2030	1160	2160	
630					0.83	7.86	0.65		1560	810	2980	2070	1220	2240	
800					0.98	9.40	0.65		1650	940	3680	2220	1260	2340	
1000					1.15	11.50	0.65		1750	1080	4490	2370	1290	2440	
1250					1.40	13.90	0.60		2015	1170	4860	2390	1340	2580	1070
1600					1.69	16.60	0.60		2150	1260	5580	2430	1420	2620	

注：1、可按用户要求提供轨距； 2、以上数据供选型参考，我公司保留修改的权利。

3、斜线上方的负载损耗值，适用于DYN11联结组，斜线下方负载损耗值适用于Yyno联结组。

Notes: 1. Our company can provide gauge according to client's requirements.

2. The parameters above are for reference only. Our company reserves the right of modification.

3. The load loss value above the slash is applicable to the DYN11. The load loss value below the slash applies to the Yyno.

S13型10kV无励磁调压配电变压器

>> S11 Series 10kV Off-Circuit-Tap-Changing Distribution Transformer

产品符合标准 The product meets the following standard:

GB1094.1-2013 电力变压器第一部分 总则 Power transformer part 1 General

GB1094.2-2013 电力变压器第二部分 升温 Power transformer part 2 Temperature rise

GB1094.3-2017 电力变压器第三部分 绝缘水平和绝缘试验 Power transformer part 3 Insulation level and insulation test

GB1094.5-2008 电力变压器第五部分 承受短路的能力 Power transformer part 5 Short-circuit withstand ability

技术参数 Technical parameters

额定容量 Rated Capacity (kVA)	电压组合 Voltage Combination			联接组 标号 Vector Group	电工钢带 Electrician steel belt		空载电流 No-load Current (%)	短路阻抗 Short-circuit Impedance (%)	重量Total Weight (kg)			尺寸Overall Dimension (mm)			
	高压 H.V. (kV)	高压分接 H.V.Tapping Range	低压 L.V. (kV)		空载损耗 No-load Loss (kW)	负载损耗 Load Loss (kW)			器身 Active Part	油重 Oil Weight	总重 Total Weight	长 L	宽 W	高 H	轨距 Gauge
30	10	±5%	0.4	Yyn0	0.08	0.63	0.6	0.63	195	70	300	1120	620	1085	300 400 550 660 820 1070
50					0.10	0.91	0.87	0.60	210	85	390	1110	720	1160	
63					0.11	1.09	1.04	0.57	260	90	450	1100	740	1240	
80					0.13	1.31	1.25	0.54	290	100	510	1125	760	1285	
100					0.15	1.58	1.50	0.48	315	110	550	1130	830	1320	
125					0.17	1.89	1.80	0.45	420	170	640	1340	830	1420	
160					0.20	2.31	2.20	0.42	515	190	860	1380	835	1480	
200					0.24	2.73	2.60	0.39	520	195	860	1400	960	1485	
250					0.29	3.20	3.05	0.36	640	205	970	1410	990	1495	
315					0.34	3.83	3.65	0.33	720	210	1190	1400	1040	1580	
400					0.41	4.52	4.30	0.30	900	240	1445	1470	1030	1730	
500					0.48	5.41	5.15	0.30	1200	350	1800	1670	1210	1750	
630					0.57	6.20	0.27	4.5	1370	425	2265	2070	1300	1785	
800					0.70	7.50	0.24		1535	442	2486	1990	1320	1839	
1000					0.83	10.30	0.21		1740	520	3100	2100	1300	1950	
1250					0.97	12.00	0.18		1975	575	3275	2300	1310	2030	
1600					1.17	14.50	0.18	5.5	2360	705	3935	2300	1340	2130	
2000					1.36	18.30	0.39		2915	720	4730	2125	1705	2550	
2500					1.60	21.20	0.30		3560	1790	6200	2390	2560	2650	

注：1、可按用户要求提供轨距； 2、以上数据供选型参考，我公司保留修改的权利。

Notes: 1. Our company can provide gauge according to client's requirements.

2. The parameters above are for reference only. Our company reserves the right of modification.

S11型10kV无励磁调压电力变压器

>> S11 Series 10kV Off-Circuit-Tap-Changing Power Transformer

产品符合标准 The product meets the following standard:

GB1094. 1-2013 电力变压器第一部分 总则 Power transformer part 1 General
GB1094. 2-2013 电力变压器第二部分 升温 Power transformer part 2 Temperature rise
GB1094. 3-2003 电力变压器第三部分 绝缘水平和绝缘试验 Power transformer part 3 Insulation level and insulation test
GB1094. 5-2008 电力变压器第五部分 承受短路的能力 Power transformer part 5 Short-circuit withstand ability

技术参数 Technical parameters

额定容量 Rated Capacity (kVA)	电压组合 Voltage Combination			联接组 标号 Vector Group	空载损耗 No-load Loss (kW)	负载损耗 Load Loss (kW)	空载电流 No-load Current (%)	短路阻抗 Short-circuit Impedance (%)	重量Total Weight (kg)			尺寸Overall Dimension (mm)			
	高压 H.V. (kV)	高压分接 H.V.Tapping Range	低压 L.V. (kV)						器身 Active Part	油重 Oil Weight	总重 Total Weight	长 L	宽 W	高 H	轨距 Gauge
630	6 6.3 10 10.5 11	±5%	3 3.15 6.3	Yd11	0.82	6.92	0.60	5.5	1300	490	2480	1980	1180	1805	820
800					1.00	8.46	0.60		1450	520	2670	2040	1275	1855	820
1000					1.18	9.91	0.60		1720	590	2995	2150	1350	1965	820
1250					1.40	11.7	0.50		2100	645	3540	2080	1420	2190	820
1600					1.68	14.1	0.40		2510	930	4475	2125	1533	2280	820
2000					2.01	16.83	0.40		3170	1105	5820	2560	2170	2470	1070
2500					2.37	19.6	0.40		3720	1295	6350	2670	2195	2590	1070
3150					2.80	23.00	0.40		4355	1370	7285	2490	2340	2660	1070
4000					3.45	27.30	0.40		5155	1750	8685	2480	2970	2400	1070
5000					4.10	31.30	0.40		6050	2150	10760	2935	3175	2980	1070
6300	10 10.5 11		3.15 6.3		4.89	35.00	0.40		7010	2580	12790	3250	3445	3150	1070

注: 1、可按用户要求提供轨距; 2、以上数据供选型参考, 我公司保留修改的权利。

Notes: 1. Our company can provide gauge according to client's requirements.

2. The parameters above are for reference only. Our company reserves the right of modification.

SZ11型10kV有载调压配电变压器

>> SZ11 Series 10kV Distribution Transformer with OLTC

产品符合标准 The product meets the following standard:

GB1094. 1-2013 电力变压器第一部分 总则 Power transformer part 1 General
GB1094. 2-2013 电力变压器第二部分 升温 Power transformer part 2 Temperature rise
GB1094. 3-2003 电力变压器第三部分 绝缘水平和绝缘试验 Power transformer part 3 Insulation level and insulation test
GB1094. 5-2008 电力变压器第五部分 承受短路的能力 Power transformer part 5 Short-circuit withstand ability

技术参数 Technical parameters

额定容量 Rated Capacity (kVA)	电压组合 Voltage Combination			联接组 标号 Vector Group	空载损耗 No-load Loss (kW)	负载损耗 Load Loss (kW)	空载电流 No-load Current (%)	短路阻抗 Short-circuit Impedance (%)	重量Total Weight (kg)			尺寸Overall Dimension (mm)			
	高压 H.V. (kV)	高压分接 H.V.Tapping Range	低压 L.V. (kV)						器身 Active Part	油重 Oil Weight	总重 Total Weight	长 L	宽 W	高 H	轨距 Gauge
200	6 6.3 10	±4× 2.5%	0.4	Dyn11	0.38	2.90	1.00	4	580	285	1150	1625	850	1490	550
250					0.44	3.42	0.90		690	335	1430	1735	1030	1510	660
315					0.53	4.10	0.90		795	390	1685	1830	1050	1620	660
400					0.64	4.95	0.80		935	423	1848	1870	1090	1740	660
500					0.76	5.89	0.80		1200	467	2321	1970	1180	1740	660
630					0.96	7.26	0.60	4.5	1380	539	2728	2125	1210	1790	820
800					1.12	8.89	0.60		1650	627	2986	2305	1310	1875	820
1000					1.36	10.40	0.60		1930	760	3215	2425	1380	1940	820
1250					1.56	12.30	0.50		2260	795	3760	2550	1400	2230	820
1600					1.92	14.70	0.50		2650	965	4535	2500	1440	2445	820
2000					2.27	18.60	0.40	0.5	3050	1095	5420	2560	2130	2445	820

注: 1、可按用户要求提供轨距; 2、以上数据供选型参考, 我公司保留修改的权利。

Notes: 1. Our company can provide gauge according to client's requirements.

2. The parameters above are for reference only. Our company reserves the right of modification.

KS9型无励磁矿用油浸式变压器

>> KS9 Series Off-Circuit Mine Oil - Immersed Transformers

产品符合标准 The product meets the following standard:

GB1094.1-1996 电力变压器第一部分 总则 Power transformer part 1 General

GB1094.2-1996 电力变压器第二部分 升温 Power transformer part 2 Temperature rise

GB1094.3-2003 电力变压器第三部分 绝缘水平和绝缘试验 Power transformer part 3 Insulation level and insulation test

GB1094.5-2008 电力变压器第五部分 承受短路的能力 Power transformer part 5 Short-circuit withstand ability

技术参数 Technical parameters

额定容量 Rated Capacity (kVA)	电压组合 Voltage Combination			联接组 Vector Group	空载损耗 No-load Loss (kW)	负载损耗 Load Loss (kW)	空载电流 No-load Current (%)	短路阻抗 Short-circuit Impedance (%)	重量Total Weight (kg)			尺寸Overall Dimension (mm)			
	高压 H.V. (kV)	高压分接 H.V.Tapping Range	低压 L.V. (kV)						器身 Active Part	油重 Oil Weight	总重 Total Weight	长 L	宽 W	高 H	轨距 Gauge
50	6	±5%	0.69 0.4	Yy0 Yd11	0.17	1.04	2.5	4	245	109	450	1060	750	985	305
63					0.20	1.30	2.4		260	120	480	1200	750	920	305
80					0.25	1.50	2.2		280	130	510	1210	800	980	305
100					0.29	1.80	2.1		332	150	640	1300	765	1056	305
125					0.34	2.20	2.0		420	160	700	1350	950	1150	305
160					0.40	2.60	1.9		470	170	780	1350	980	1200	305
200					0.48	3.06	1.8		625	255	995	1670	975	1180	305
250					0.56	3.60	1.7		670	280	1160	1750	1020	1350	305
315					0.67	4.32	1.6		745	320	1380	1610	1025	1255	305
400					0.80	5.22	1.5		850	360	1560	1780	1180	1325	305
500					0.96	6.21	1.4		1015	435	1920	1870	1250	1365	335
630					1.20	7.29	1.3	5	1135	450	2075	1910	1215	1296	335
800					1.40	8.91	1.2	6	1250	500	2250	2100	1450	1450	335
1000					1.70	10.44	1.1		1300	550	2350	2150	1450	1500	335

注：1、可按用户要求提供轨距； 2、以上数据供选型参考，我公司保留修改的权利。

Notes:1.Our company can provide gauge according to client's requirements.

2.The parameters above are for reference only. Our company reserves the right of modification.

变压器配套的主要组件

>> Main components for transformer

配套组件 Fitting components

压力释放阀 Pressure-relief valve



有常闭式转换触点供跳闸用。

It is equipped with normally-closed contact for tripping.

风冷控制柜 Air Cooling Control Cabinet



可根据用户的要求提供不同的配置。

Our company will provide different configurations according to the client's requirement.



散热装置 Radiator

选用片式散热器及侧吹式风机组合，散热效果好，噪音低，外型美观。

Selection both of panel radiator and side blow fan which have the characteristics of good heat-emitting effect, low noise and good-looking will be used.

有载及无载分接开关

On-load or No-load Tap Changer



有载开关选用进口或国内成熟厂家的SYJZZ型或V型产品，耐用可靠，操作方便。电气操作次数20万次，机械操作次数80万次。全封闭变压器特别配置的专业无励磁开关产品性能优良，运行可靠。

The SYJZZ-type or V-type on-load tap changer is exported from overseas or manufactured by the best manufacturer in China. They have the characteristics of long duration, reliability and convenient operation. The electric operations will be 200000 times and mechanical operations 800000 times. The complete-sealed transformer has the special configuration of professional off-circuit-tap-changing with excellent performance, reliable operation.



套管 Bushing

35kV：带附加绝缘的单体瓷绝缘式，泄漏比≥2.5cm/kV。

10kV：单体瓷绝缘式，泄漏比≥2.5cm/kV。

以上泄漏比均为Ⅲ级防污。
我公司可按用户要求提供其它防污等级的套管。

35kV: monomer porcelain insulation type with additional insulation, creepage distance≥ 2.5cm / kV.

10KV: monomer porcelain insulation type, creepage distance≥2.5cm / kV.

The antifouling level of the above leakage ratio is III.
According to the client's requirements, our company can supply other bushings with different pollution levels.

变压器配套的主要组件

>> Main components for transformer

配套组件 Fitting components

正常供货的8000kVA变压器带有三种测温装置:

◎水银温度计 可利用它在变压器本体上直接测得油面温度。

◎电阻温度计 可利用此温度计实现远方测温, 即将电阻温度计数显表接至中央控制室。

◎讯号温度计 此温度计表盘固定于变压器本体适当位置, 可直接从表盘读取变压器油面温度, 其功能是可设置温度限值, 当变压器温度达到限值时, 其可发出警报信号, 且其温度限值可设置两档, 即第一温度限值及第二温度限值。此温度计与控制箱相连, 可根据变压器顶层油温控制散热器风扇电机开关。

本公司也可以根据用户需要添加其它的变压器组件, 如绕组温度计、突发压力继电器、开关滤油机、变压器在线监测装置等, 但必须在变压器订货协议内声明。

Normally, the 8000kVA transformer is equipped with three types temperature measurement devices:

◎Mercury Thermometer It is used to measure oil surface temperature directly on main body of transformer.

◎Resistance Thermometer It is used to measure temperature remotely, that is to connect resistance temperature display to central control room.

◎Signal Thermometer This thermometer is fixed at an appropriate place on the main body of transformer. The top oil temperature can be read directly from dial. The thermometer has the function of temperature set. When the temperature reaches its limit, an alarm signal will be sent out and its temperature limit can be set two files, that is the first temperature limit and the second temperature limit. The thermometer is connected with control cubicle, so the fan motor will be open or close according to the temperature of top oil.

Our company can also provide other components, such as winding temperature indicator, sudden pressure relay, oil filter for tap changer, transformer on-line monitor device and so on, which must be clearly stated in the order agreement.

CBW系列箱式终端变电站 (欧式)

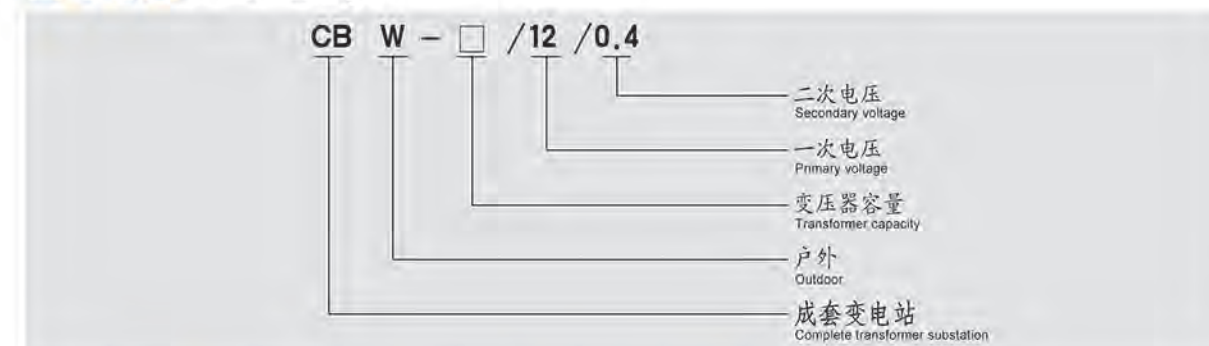
>> Box type terminal substation of CBW series (European style)

概述 General

CBW系列箱式变电站是把高、低压开关设备、变压器和外壳由工厂预先装配完成的可移动变电成套设备, 可用于环网及终端配电系统。适用于工矿企业、高层建筑、住宅小路灯、机场、高速公路、港口、油田等场所变电、馈电、动力、照明之用, 具有成套性强、体积小、造型美观、运行安全可靠、维护方便、深入负荷中心、建设周期短、减少浪费等优点。

The compartmental substation of CBW series is composed of HV and LV distribution equipment, transformer and outer shell and it can be used in grid and terminal distribution system. The compartmental substation is widely applied in industrial and mining enterprises, high buildings, residential zone, airport, high express way, port and some other places that needs power, illumination, and electricity transforming. The compartmental substation with the characteristics of small dimension, delicate structure, smooth running, easy maintain, low cost, deep to load center, short construction period etc.

型号含义 Model meaning



CBW系列箱式变电站 (欧式) 标准使用环境

Standard service environment of CBW series box type substation (European style)

户外 海拔高度一般不超过2000m; 环境温度一般为-30℃~+40℃; 风速不大于35m/s; 空气相对湿度不大于90% (+25℃); 地震加速水平: 0.4m/s²、垂直: 0.2m/s²; 安装地点没有对设备导体和绝缘有严重影响的气体、蒸汽或其它化学腐蚀物质存在, 没有火灾和爆炸危险, 地面倾角不超过5°。

当上述正常使用条件不满足要求时, 用户与生产厂协商解决。

Outdoor Altitude is generally not more than 2000m; Ambient temperature is generally -30℃~+40℃; Wind speed is not greater than 35m/s; Air relative temperature is not more than 90% (+25℃); Seismic acceleration level: 0.4m/s², vertical: 0.2m/s²; Installation site not exist gas, vapor or other chemical substances that have serious effects on the conductor and insulation of the equipment and also are free from fire and explosion hazard. The ground inclination does not exceed 5°.

When the above normal use conditions do not meet the requirements, the client can consultate with the manufacturer to solve.

CBW系列箱式变电站（欧式）

>> Box Type Substation of CBW Series (European style)

技术参数 Technical Parameters

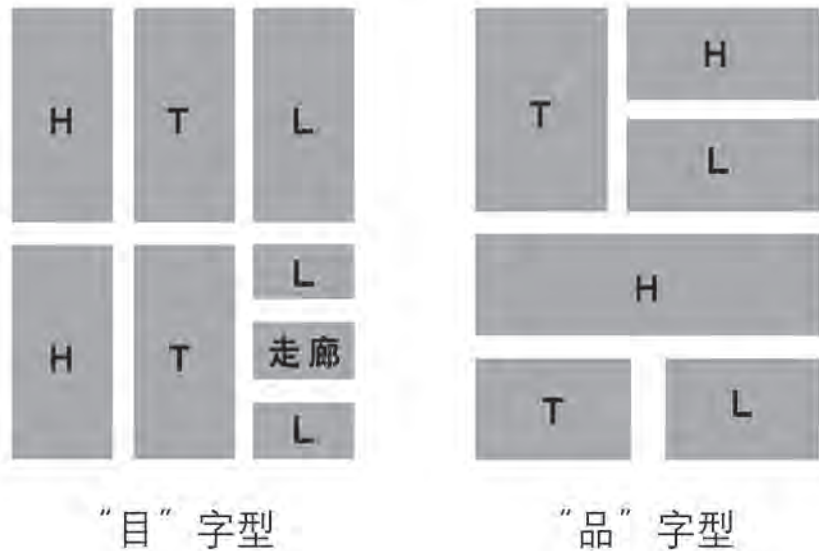
序号 Serial No	项 目 Project		单 位 Unit	高 压 侧 HV side			变 压 器 Transformer				低 压 侧 LV side			
1	额定容量 Rated capacity		kVA				50-1600							
2	额定电压 Rated voltage		kV	12(6.3)			10(6)0.4				0.4			
3	开关额定电流 Tap changer rated current		A	630							70-2500			
4	额定短路开断电流 (有效值) Rated Short-circuit Breaking Current(Rms)		KA	31.5							≤400kVA 35 >400kVA 50			
5	热稳定时间/热稳定电流 (有效值) Thermo stability time/ thermo stability current(Rms)		S/KA	4/16 2/20 12 6.3			10 6				1/15 1/30 0.4			
6	绝缘水平 Insulation level	额定电压 Rated voltage	kV	相间 相地 Interphase Phase to ground	断口 Fracture	相间 相地 Interphase Phase to ground	断口 Fracture	油浸 Oil - immersed	干式 Dry type	油浸 Oil - immersed	干式 Dry type	相间 Inter- phase	相地 Phase to ground	
		42		48	32	36	35	28	2.5	2.5	2.5			
		75		85	60	65	75	75	-	-				
7	噪 音 Noise	油浸变压器 Oil - immersed transformer	dB	≤50										
		干式变压器 Dry type transformer		≤55										
8	防护等级 Protection class			IP43										

以上数据如有改动，恕不另行通知。
The above data are subject to change without notice.

CBW系列箱式变电站（欧式）

>> Box Type Substation of CBW Series (European style)

常见平面布置方案示意图
Schematic diagram of common plane layout



产品结构简介 Introduction to product structure

1. 本产品由高压配电装置、变压器及低压配电装置联接而成。分为三个功能隔室。即高压室、变压器室和低压室。高压室功能齐全，高压室HXGN-12环网柜组成一次供电系统，可布置成环网供电、终端供电、双电源供电等多种供电方式，还可装设高压计量元件，满足高压计量的要求。变压器可选择SM11以及其他低损耗油浸变压器或干式变压器。变压器设自动强迫风冷系统及照明系统，低压室采用柜装式结构组成用户所需供电方案，有动力配电、照明配电、无功补偿、电能计量等多种功能，满足用户的不同要求，并方便用户的供电管理和提高供电质量。

1. This product is connected by high-voltage power distribution devices, transformers and low-voltage power distribution devices and divided into three functional compartments, that is high voltage room, transformer room and low voltage room. High-voltage room with complete function that high-voltage room HXGN-12 ring network cabinet composed of a power supply system which can be arranged for ring network power supply, terminal power supply, dual power supply and other power supply, but also install HV metering components to meet the

CBW系列箱式变电站（欧式）

>> Box Type Substation of CBW Series (European style)

requirements of HV measurement. Transformers can choose SM11 and other low-loss oil-immersed transformers or dry-type transformers. The transformer is equipped with automatic forced air-cooling system and lighting system. The low-voltage room adopts the cabinet-type structure to meet the client's power supply scheme including power distribution, lighting distribution, reactive power compensation, energy metering and other functions and facilitate the user's power management and improve the quality of power supply.

2、箱式变电站内部框架均为焊接，外壳采用双层彩涂钢板（中间为泡沫夹层），焊接框架时将内部分为高压室、变压室、低压室三个功能单元，整体起吊采用变电站下部起吊方式。箱壳顶盖采用隔层通气式结构，内装有隔热层以抵御太阳辐射的影响，箱体底部和各室之间设有冷却进出风口，采用自然通风和自动控制的强迫散热风冷装置等形式。保证电器设备的正常运行，可以提高变压器的负荷系数。箱体外露的通风口均采取滤网结构，既可防尘、防小动物入内，又不影响空气流通。该种结构刚性强度好，防锈能力更强，外形美观。

2. The internal frame of the box-type substation is welded, shell with the double-layer color coated steel plate (the middle is the foam sandwich). The welding frame will be divided into high-voltage room, transformer room, low voltage room and integral lifting adopts lower part lifting mode of transformer substation. The box cover is covered with a ventilated structure with a thermal insulation layer to protect against the effects of solar radiation. There is a cooling inlet and outlet between the bottom of the box and each room, and air natural cooling and forced cooling air cooling device with automatic control form are adopted to ensure the normal operation of electrical equipment also increase the load factor of the transformer. Box exposed vents are taken filter structure to prevent dust, anti-small animals into the inside, without affecting the air circulation. This kind of structure has the characteristics of good rigidity, stronger anti-rust ability and beautiful appearance.

3、根据用户需要，高、低压室可设操作走廊或维修走廊，必要时也可设值班室。
3. According to client's needs, high voltage and low voltage room can be set up operating corridor or maintenance corridor, if necessary, can also set duty room.

4、为了适应高湿度地区的需要，组合变电站内可装有温湿度监控系统。
4. In order to meet the needs of high humidity areas, combined substation can be equipped with temperature and humidity monitoring system.

CBW系列箱式变电站（欧式）

>> Box Type Substation of CBW Series (European style)

常见接线方式 Common wiring methods

本箱变高、低压单元均采用组合式柜，按所需接线方案分别组合成高、低压配电系统，即常用高、低压接线方案可选用，同时高压单元又可组合成环网型式等。

The HV/LV units of the box type substation are used combination cabinet which can be combined into HV/LV distribution system according to the wiring scheme, that is, common HV/LV wiring scheme can be used, and HV unit can be combined into ring network type etc.

◎高压单元接线方案 HV unit wiring scheme
配备气压式负荷开关 Equipped with gas pressure load switch

一次线路方案编号 Primary wire program No	01	02	03	04
一次系统图 Primary system diagram				
主要设备 Main equipment				
负荷开关 FN12-630 Load switch		1	1	1
带电显示器 DXN2-10/T Live display	1	1	1	1
避雷器 HY5WS-17/50 Surge arrester	3	3	3	
熔断器 XRNT-12 Fuses				3
电流互感器 LZJ (LFS) -10 Current Transformer			1	
电压互感器 JDZ-10/0.1KV Voltage transformer				
熔断器 RN2-10/0.5A Fuses				

一次线路方案编号 Primary wire program No	05	06	07	08
一次系统图 Primary system diagram				
主要设备 Main equipment				
负荷开关 FN12-630 Load switch	1	1		
带电显示器 DXN2-10/T Live display			1	1
避雷器 HY5WS-17/50 Surge arrester				
熔断器 XRNT-12 Fuses	3	3		
电流互感器 LZJ (LFS) -10 Current Transformer	1	2	2	2
电压互感器 JDZ-10/0.1KV Voltage transformer			1	2
熔断器 RN2-10/0.5A Fuses			3	3

CBW系列箱式变电站（欧式）

>> Box Type Substation of CBW Series (European style)

常见接线方式 Common wiring methods

本箱变高、低压单元均采用组合式柜，按所需接线方案分别组合成高、低压配电系统，即常用高、低压接线方案可选用，同时高压单元又可组合成环网型式等。

The HV/LV units of the box type substation are used combination cabinet which can be combined into HV/LV distribution system according to the wiring scheme, that is, common HV/LV wiring scheme can be used, and HV unit can be combined into ring network type etc.

◎高压单元接线方案 HV unit wiring scheme

配装真空负荷开关 Equipped with gas pressure load switch

一次线路方案编号 Primary wire program No.	01	02	03	04
一次系统图 Primary system diagram				
主要设备 Main equipment				
负荷开关 FZN25-630 Load switch		1	1	1
带电显示器 DXN2-10/T Live display	1	1	1	1
避雷器 HY5WS-17/50 Surge arrester	3	3	3	3
熔断器 XRNT-12 Fuses				3
电流互感器 LZJ (LFS) -10 Current Transformer			1	
电压互感器 JDZ-10/0.1kV Voltage transformer	2	2		
熔断器 RN2-10/0.5A Fuses	3	3		

一次线路方案编号 Primary wire program No.	05	06	07	08
一次系统图 Primary system diagram				
主要设备 Main equipment				
负荷开关 FZN25-630 Load switch	1	1		
带电显示器 DXN2-10/T Live display			1	1
避雷器 HY5WS-17/50 Surge arrester				
熔断器 XRNT-12 Fuses	3	3		
电流互感器 LZJ (LFS) -10 Current Transformer	1	2	2	2
电压互感器 JDZ-10/0.1kV Voltage transformer			2	2
熔断器 RN2-10/0.5A Fuses			3	3

CBW系列箱式变电站（欧式）

>> Box Type Substation of CBW Series (European style)

常见接线方式 Common wiring methods

◎低压单元接线方案 LV unit wiring scheme

一次线路方案编号 Primary wire program No.	01	02	03	04
一次系统图 Primary system diagram				
主要设备 Main equipment				
开关 HD13B□ Switch	1		1	2
断路器 CW1-□ Circuit breaker			1	2
断路器 CM1 Circuit breaker	2~4	2~4		
电流互感器 LMZ2-0.66-□ Current Transformer	3	3	3(4)	6

一次线路方案编号 Primary wire program No.	05	06	07	08
一次系统图 Primary system diagram				
主要设备 Main equipment				
刀开关 HD13B□ Knife switch	1	2		1
断路器 CM1 Circuit breaker	4	4	4	
电流互感器 LMZ2-0.66-□/5A Current Transformer	4	4	6	3
熔断器 RT14-32A Fuses				24
接触器 B25C Contactor				8
电容器 BSMJ1-0.4-□-3 Capacitor				8(15kVar)
避雷器 Y3W-0.28-1.3 Surge arrester				3

注：以上方案，仅供参考，我公司根据用户要求，可提供其它最佳方案。
Note: Scheme above is for reference only ,other customized scheme is available depend on concrete requirement.

CBW系列箱式变电站（欧式）

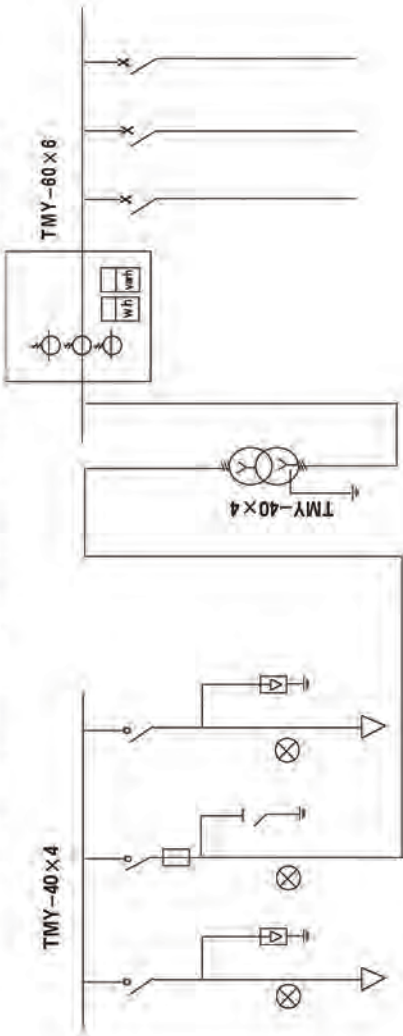
>> Box Type Substation of CBW Series (European style)

CBW系列箱式变电站（欧式）典型组合接线方式

CBW Box Type Substation Typical Combination Wiring Method (European style)

例：CBW-400/12/0.4环网高供低计

CBW-400/12/0.4 ring network HV power supply and LV measurement



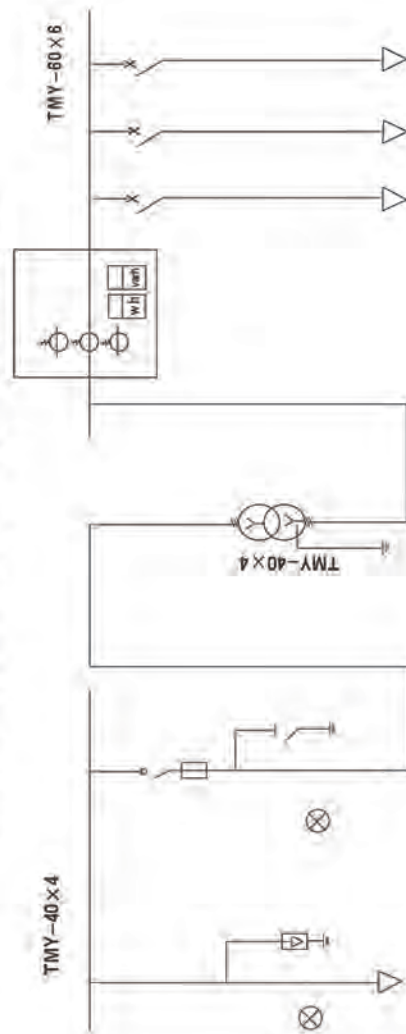
序号	型号/柜名	环网柜(左)	环网柜(中)	环网柜(右)	变压器室	低压柜
1	负荷开关	FN12-630	FN12-630	FN12-630	1	
2	塑壳断路器					CM1-400/3300
3	电流互感器					LMZ2-0.66 600/5A
4	计量电流互感器					
5	接线盒					
6	熔断器		XRNT-12			
7	避雷器	HY5WS-17/50		HY5WS-17/50	3	
8	电能表					DT862
9	带电显示器	DXN2-10/T	DXN2-10/T	DXN2-10/T	1	DX862
10	变压器				SM11-400/10	

CBW系列箱式变电站（欧式）典型组合接线方式

CBW Box Type Substation Typical Combination Wiring Method(European style)

例：CBW-400/12/0.4终端高供低计

CBW-400/12/0.4 terminal HV power supply LV measurement



序号	型号/柜名	环网柜(左)	环网柜(中)	环网柜(右)	变压器室	低压柜
1	负荷开关	FN12-630	FN12-630	FN12-630	1	
2	塑壳断路器					CM1-400/3300
3	电流互感器					LMZ2-0.66 600/5A
4	计量电流互感器					
5	熔断器					
6	避雷器	HY5WS-17/50		XRNT-12	3	
7	电能表					DT862
8	带电显示器	DXN2-10/T	DXN2-10/T	DXN2-10/T	1	DX862
9	变压器				SM11-400/10	

CBW风力发电专用升压设备（欧变）

>> CBW Wind Power Step-up Equipment (European style transformer)

概述 General

随着我国经济的不断增长，对电力的需求大幅上升，导致电力能源的供求矛盾更加突出，到二十一世纪，开发利用可再生的清洁能源已经成为人类面临的重大课题之一，此时风力发电作为一种清洁的能源生产方式，在我国得到了迅猛的发展，而做为风力发电的重要配套升压设备，风力发电用预装箱式变电站，将变压器、开关设备、限流熔断器、相应辅助设备组合于一体，针对风力发电的特殊性，为用户提供理想的解决方案，提供了两种并网电压、三种结构不同的箱变供您选择。

With the continuous growth of China's economy, the demand for electricity has risen sharply, leading to the contradiction between supply and demand of electric energy is more prominent. By the 21st century, the development and utilization of renewable clean energy has become one of the major problems facing of mankind. Wind power generation as a clean energy production methods in China has been the rapid development while as an important supporting booster equipment, wind power combined pre-installed box substation, the transformer, switching equipment, current limiting fuses, and corresponding auxiliary equipment together. Our company consider the special nature of wind power, to provide clients with the ideal solution, providing two grid-connected voltage, three different structure of the box.

CBW预装式变电站（欧变） CBW Prefabricated Substation(European style transformer)

1、CBW预装式变电站 CBW prefabricated substation

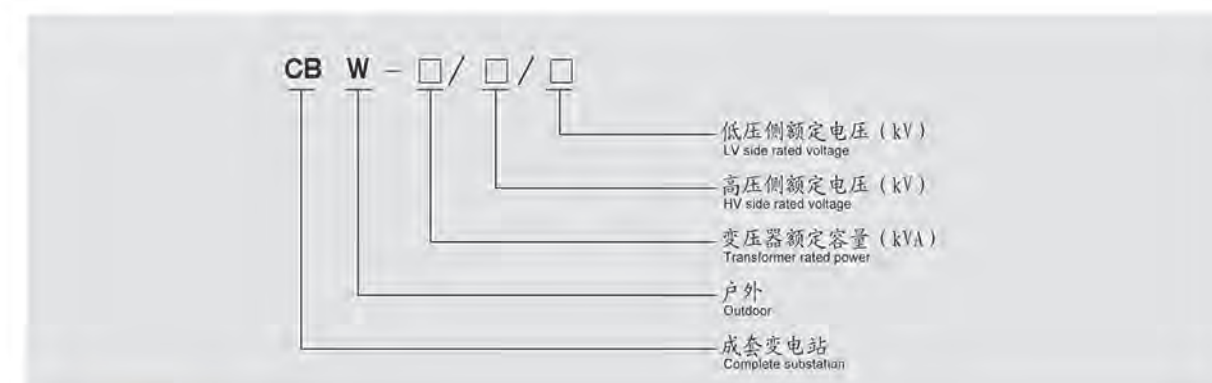
本箱变是将风力发电配套升压站预先在工厂内制造、装配，包括升压变压器，高压开关、低压开关以及电源变压器等辅助设备配置在一个公用外壳内并通过形式试验的一种成套变电站。该结构产品融合了欧变与美变的优点，是针对风电的特殊性专门设计的新型升压设备，具有成套性强、便于安装、施工周期短、运行费用低、结构强度高、防腐性能强、环保节能等优点，适用于自然条件比较恶劣的海滩、荒漠等运行环境。该产品通过武高所试验，产品性能完全满足风电厂使用要求。

The box type transformer is a complete set of substations that are preparatory installed and assembled wind power supporting substation in the factory, including booster transformers, high voltage switches, low voltage switches and power transformers, etc., which are arranged in a common enclosure and tested in the form. The product structure combines the advantages of the European style transformer and the American style transformer. It is designed for wind power special nature of the new step-up equipment, with strong complete sets, easy to install, short construction period, low operating costs, high structural strength, strong anti-corrosion performance, environmental protection and energy saving advantages for the bad natural conditions of the poor beach, desert and other operating environment. The product through the test of Wuhan High Voltage Research Institute which performance fully meet the requirements of the use of wind power plants.

CBW风力发电专用升压设备（欧变）

>> CBW Wind Power Step-up Equipment (European style transformer)

2、型号说明 Model specification



3、使用环境 Service environment

- ◎海拔高度一般不超过3000米；
 - ◎环境温度一般为：最高温度+42℃，最低温度-40℃；
 - ◎湿度：日相对湿度平均值不超过95%；月相对湿度平均值不超过90%；
 - ◎风速：户外风速不超过45m/s；
 - ◎防震：水平加速度不大于0.4m/s²，垂直加速度不大于0.2m/s²；
 - ◎安装地点倾斜度：不大于3°；
 - ◎安装环境：周围空气无可燃性气体等明显污染，安装地点无剧烈震动；
 - ◎订购本产品超出上述条件的规定时，可与本公司协商。
-
- ◎Altitude is generally not more than 3000 meters;
 - ◎Ambient temperature: the maximum temperature +42℃, the minimum temperature -40℃;
 - ◎Humidity: daily average relative humidity of not more than 95%; monthly relative humidity of not more than 90%;
 - ◎Wind speed: outdoor wind speed does not exceed 45m/s;
 - ◎Shockproof: the level of acceleration is not greater than 0.4m/s², vertical acceleration is not greater than 0.2m/s²;
 - ◎Installation site inclination: not more than 3°;
 - ◎Installation environment: the surrounding air without flammable gas and other obvious pollution, the installation site without severe vibration;
 - ◎When client's requirements beyond the above conditions, can consult with the Company.

CBW风力发电专用升压设备（欧变）

>> CBW Wind Power Step-up Equipment (European style transformer)

4、产品结构特点 Product structure characteristic

4.1 CBW预装式变电站（油变）CBW prefabricated substation (oil-immersed transformer)

本箱变融合了欧变与美变的优点，更加适合于风电场的使用，具体有以下特点：

This box type transformer has the advantages of European and American style transformer that is more suitable for the use of wind power plants. More specific characteristics as below;

◆高压开关的隔离刀与灭弧室及熔断器分室放置，解决了一般开关更换熔断器或灭弧室需要停电整条线路的问题，真正实现了单台检修无需停其他风机的性能；

◆高压开关至变压器连线用母排连接，解决了用电缆连接带来的运行安全问题；

◆借鉴美变的优点，变压器散热片敞开式安装，实现了完全自然通风散热性能，节约了大量的因强迫通风带来的电能损失，也杜绝了因强迫通风带来的风扇性能不可靠而容易超温跳闸的缺陷；也实现了带电体完全密封在箱变内，解决了防尘问题；

◆变压器的油位计、气体继电器、压力释放等装置均敞开式安装，能够直观的观察变压器运行状况；

◆保护功能完全同于欧变的保护功能；

◆由于无变压器室，整机的占地面积相比于欧变减小，变压器美变结构的进出线方式节约了大量的铜材，因此整机成本较欧变低，用户投资减少。

◆High voltage isolation knife switch, the arc chamber and fuse sub-room sub-room placed to solve the general switch's problem that replace the fuse or interrupter need to power out the whole line and meet realization of a single maintenance without stopping the performance of other fans;

◆High-voltage switch to the transformer connection with the busbar connection to solve the cable connection with the operation of security issues;

◆Learning the advantages of American style transformers, the transformer radiator panel with open installation, to achieve a completely natural ventilation and cooling performance, saving a lot of energy due to forced ventilation damage, but also put an end to the fan's performance unreliable and easy over-temperature trip defects caused by forced ventilation; to achieve the charged body completely sealed inside the box-type transformer to solve the dust problem;

◆Transformer oil level meter, gas relay, pressure release and other devices are open-type installation to visually observe the transformer operating conditions;

◆Protection function is exactly the same with European style transformer protection function;

◆Because there is no transformer room, the whole area of the transformer compared to the European to reduce the transformer footprint. American transformer structure of the inlet and outlet way to save a lot of copper, so the cost of the machine lower than the European and reduce the user's investment.

CBW风力发电专用升压设备（欧变）

>> CBW Wind Power Step-up Equipment (European style transformer)

4.2 CBW预装式变电站（干变）CBW prefabricated substation (Dry type transformer)

◆高压开关的隔离刀与灭弧室及熔断器分室放置，解决了一般开关更换熔断器或灭弧室需要停电整条线路的问题，真正实现了单台检修无需停其他风机的性能；

◆高压开关至变压器连线用母排连接，解决了用电缆连接带来的运行安全问题；

◆保护功能完全同于欧变的保护功能；

◆采用免维护型干式变压器，完全杜绝了夏天溢油、冬天补油及渗漏油情况的发生，真正实现了无油化运行；

◆箱体和顶盖为双层结构，可确保防止雨水进入以及防止热辐射增加室内温度；它具有优良的隔热保温性能，保证设备在严寒环境中安全、迅速投入运行；

◆High voltage switch isolation switch, the arc chamber and fuse sub-room sub-room placed to solve the general switch's problem that replace the fuse or interrupter need to power out the whole line and meet realization of a single maintenance without stopping the performance of other fans;

◆High-voltage switch to the transformer connection with the busbar connection to solve the cable connection with the operation of security issues;

◆Protection function is exactly the same with the European style transformer protection function;

◆The use of maintenance-free dry-type transformers, completely put an end to the summer oil spill, winter fuel and oil leakage occurred and achieve realization of the oil-free operation;

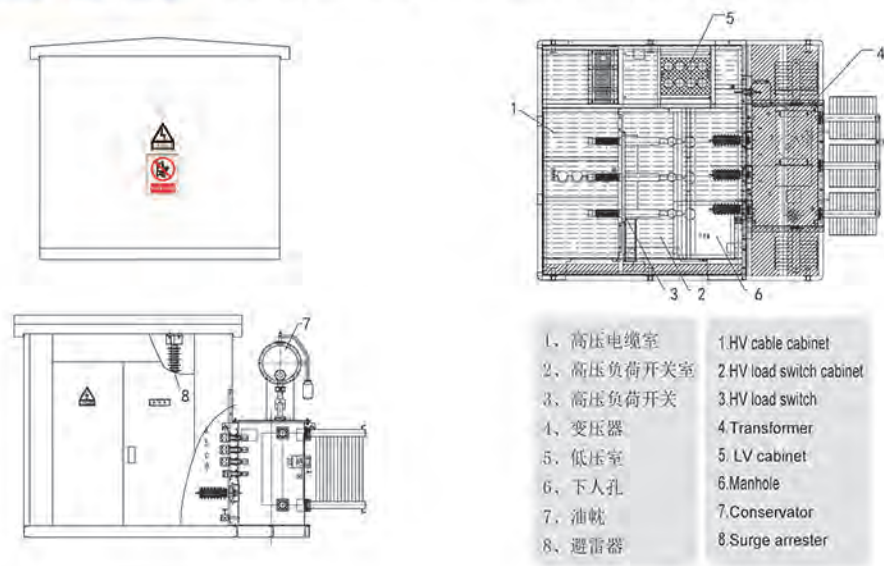
◆Box and roof with the double-layer structure, to prevent that the rain penetration and heat radiation to increase the indoor temperature; it has excellent thermal insulation properties to ensure that the equipment in a cold environment operation safely and quickly;

CBW风力发电专用升压设备（欧变）

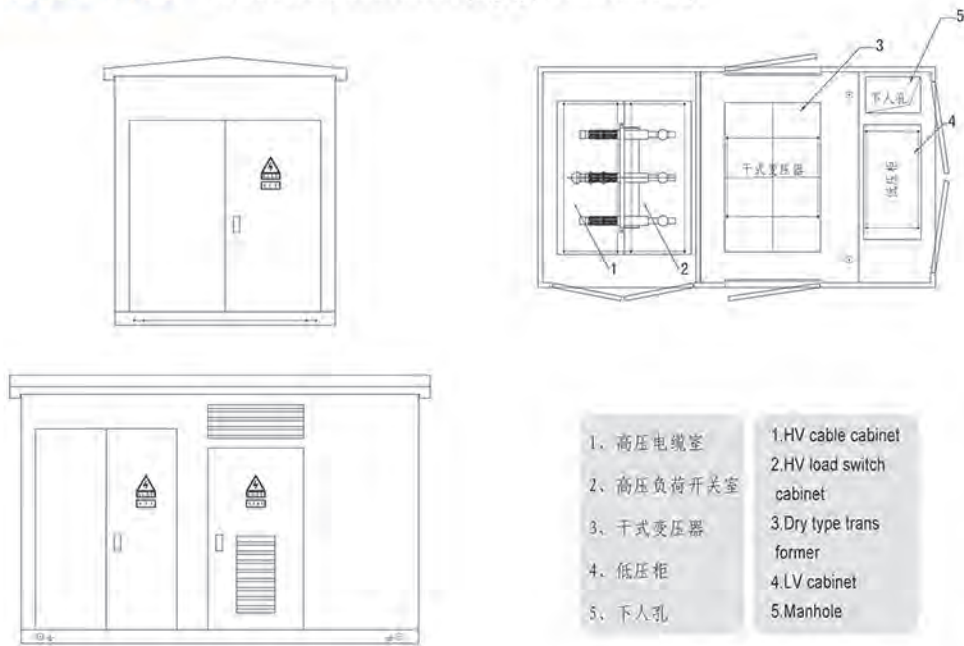
>> CBW Wind Power Step-up Equipment (European style transformer)

5、产品结构外形示意图 Product structure outline schemetic diagram

5.1 CBW预装式变电站（油变）CBW prefabricated substation (oil-immersed transformer)



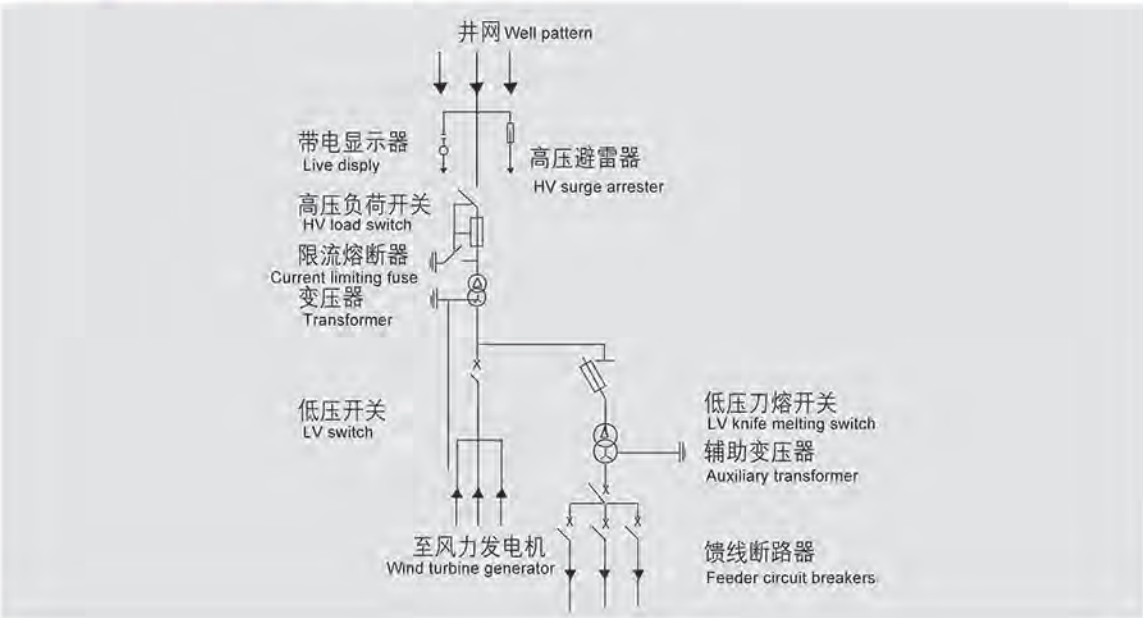
5.2 预装式变电站（干变）Prefabricated substation (dry type transformer)



CBW风力发电专用升压设备（欧变）

>> CBW Wind Power Step-up Equipment (European style transformer)

6、典型方案图 Typical scheme diagram



7、主要技术参数 Technical Parameters

项 目 Project	单位 Unit	高压开关 HV switch		变压器 Transformer		低压电器 Low voltage electrical appliances
额定电压 Rated voltage	kV	12	40.5	10/0.69	35/0.69	0.69
额定容量 Rated power	kVA			600~3300		
额定频率 Rated frequency	Hz	50		50		50
额定电流 Rated current	A	200	80			
1min工频耐压 1 minute power frequency withstand voltage	相间及对地 Interphase Phase to ground	kV	42	95	35	85
	隔离断口 Isolated fracture	kV	48	110		
雷电冲击耐压 Lightning impulse withstand voltage	相间及对地 Interphase Phase to ground	kV	75	185	75	220
	隔离断口 Isolated fracture	kV	85	215		
额定短路开断电流(有效值) Rated Short-circuit Breaking Current(rms)	kA	50	31.5			50
额定短时耐受电流(有效值) Rated short-time withstand current (rms)	kA	20(4s)	20(4s)			40(1S)
额定短路关合电流(峰值) Rated short-circuit closing current (peak)	kA	50	50			
额定峰值耐受电流 Rated peak withstand current	kA	50	50			
防护等级 Protection class	IP33					
噪声水平 Noise level	≤55dB					

CBW风力发电专用升压设备（欧变）

>> CBW Wind Power Step-up Equipment (European style transformer)

8、元器件选型表 Component selection table

容量 Capacity	高压开关 HV switch		高压熔断器 HV fuses		高压避雷器 HV surge arrester		低压开关 LV switch	辅助变压器 Auxiliary transformer
	12	40.5	12	40.5	12	40.5		
600	FZRN25-12.5 VTK3-12	YFZ- RN35-40.5 /T-31.5	XRNT-12/63	XRNT-40.5/25	HY5WZ-17/4 5、 TBP-B-17F	HY5WZ-51/ 134、 TBP-B-51F	CW1断路器 KFW2断路器	SG-63/0.69 SG-3/0.69 容量可根据 风机型式确 定 The capacity can be determined according to the fan type
660			XRNT-12/63	XRNT-40.5/25				
750			XRNT-12/80	XRNT-40.5/25				
900			XRNT-12/100	XRNT-40.5/25				
1400			XRNT-12/125	XRNT-40.5/40				
1600			XRNT-12/160	XRNT-40.5/50				
2200				XRNT-40.5/63				
2350				XRNT-40.5/63				
2800				XRNT-40.5/80				
3300				XRNT-40.5/80				

元器件型号可根据用户要求进行 Component models can according to user requirements

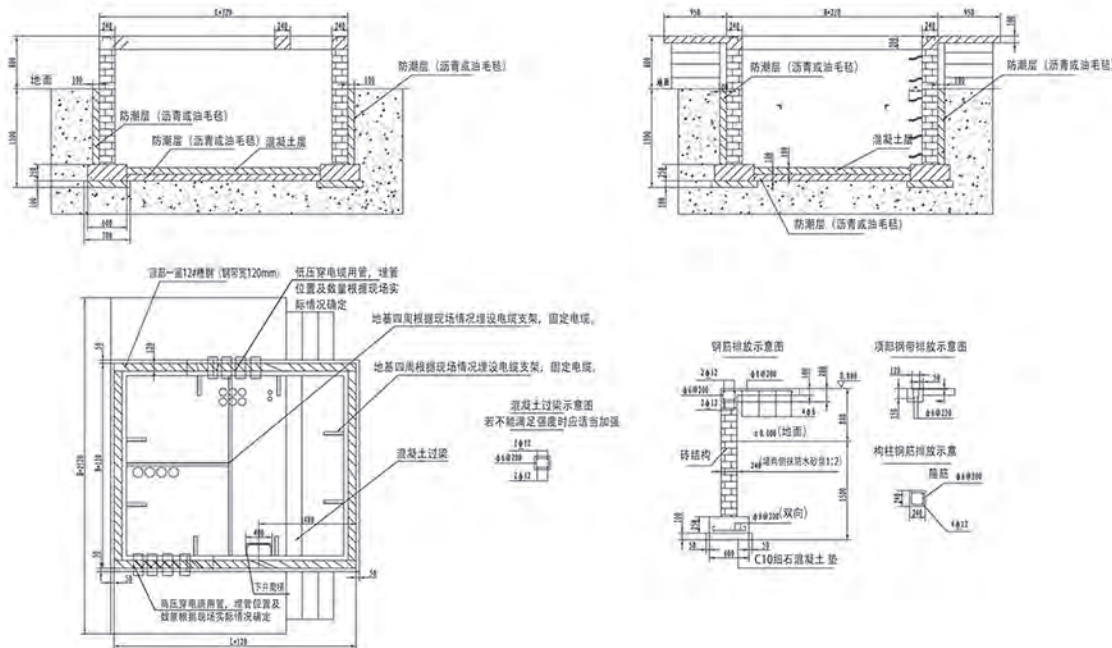
9、产品生产现场 Product production site



CBW风力发电专用升压设备（欧变）

>> CBW Wind Power Step-up Equipment (European style transformer)

10、箱变基础图 Base diagram of box transformer



技术要求 Technical requirement

- 1、图中所提供的尺寸适用一般地质条件，对于地质条件差的位置可根据情况确定基础尺寸。
- 2、接地网根据安装地点土质条件，按照有关规程确定，接地电阻应保证不大于4Ω。
- 3、敷设的保护管的内径不小于电缆外径(包括外护层)的1.5倍。(敷设的保护管数量根据所需电缆定)如不能供电的近似外径，可按图管径埋设。
- 4、箱变应装在水平混凝土平台钢板上，应保证承受其重量。箱变重量约8吨，平台要结实，并保证顶部钢带平面度≤3mm，应抗8级地震。该地基应能长期承重10吨。
- 5、应防止进入电缆沟；装设完电缆后，电缆口应用沥青封死。通风口设百叶窗及金属网防止水溅入和小动物的进入。
- 6、电缆沟口，实际工程应根据具体情况设置。
- 7、箱变外形尺寸为长×宽=L×Bmm，尺寸根据具体方案提供。
- 8、地基应位于较高地势，且不宜积水处。地基四周应加防潮层（沥青或油毡）。

CBW风力发电专用升压设备（欧变）

>> CBW Wind Power Step-up Equipment (European style transformer)

- 9、基础垫层为C10混凝土，基础为C20混凝土。砖墙为M5水泥砂浆砌模机砖。
- 10、上部圈梁为C20混凝土，钢筋“φ”为I级钢，钢筋“Φ”为II级钢。
- 11、基础必须挖至老土，并进行钻探，会同有关人员验槽，无其它情况后方可进行基础施工。
- 12、圈梁上面应保证平整，应根据设计平整误差要求施工。
- 13、四角长度方向的中间设构柱各一根，构柱钢筋伸入基础和圈梁内，与基础、圈梁整浇。

Technical requirement

1. The dimensions provided in the drawings apply to general geological conditions, and the location of the poor geological conditions can adjust the base size according to real situationb.
2. The grounding network shall be determined according to the relevant regulations, and soil conditions of the installation site. The grounding resistance shall be guaranteed to be no more than 4Ω.
3. The inner diameter of the protective tube is not less than 1.5 times to the outer diameter of the cable (including the outer sheath). (The number of protective tubes to be laid is determined according to the required cable). If the approximate diameter of the cable can not be used, it can be buried use the pipe diameter in the drawing.
4. Box type transformer should be installed in the steel plate of horizontal concrete platform and guaranteed to bear its weight. The weight of box type transformer about 8 tons with strong platform and to ensure that the top steel flatness ≤ 3mm, should be resistant to magnitude 8 earthquake. The foundation should be capable of long-term load of 10 tons.
5. Debris should be prevented from entering the cable trench; the cable port is sealed with asphalt after the cable installed,. Ventilation shutters and metal mesh to prevent water splashing and small animals into the vent.
6. The project should based on the specific circumstances set up cable trench mouth.
7. The box transformer dimensions are long × wide = L × Bmm, and the dimensions are provided according to the specific scheme.
8. The foundation should be located in the higher terrain, and no water. Around foundation should add moisture (asphalt or linoleum).
9. The base cushion is C10 concrete and is based on C20 concrete. The brick wall is made of M5 cement mortar masonry brick.
10. Upper ring beam is C20 concrete, steel “φ” grade is I; steel “Φ” grade is II.
11. The foundation must be dug to the old soil, and should be drilling together with the relevant personnel inspection slot to ensure there is no other circumstances before the basic construction.
12. The above beam should ensure smooth. Smooth construction should be based on the design tolerance requirement .
13. Four corners, in the middle of each length with one column. Column steel bar reinforced into the foundation and ring beam, pouring together with them.

CBW光伏发电专用升压设备

>> CBW Photovoltaic Power Generation Step-up Equipment

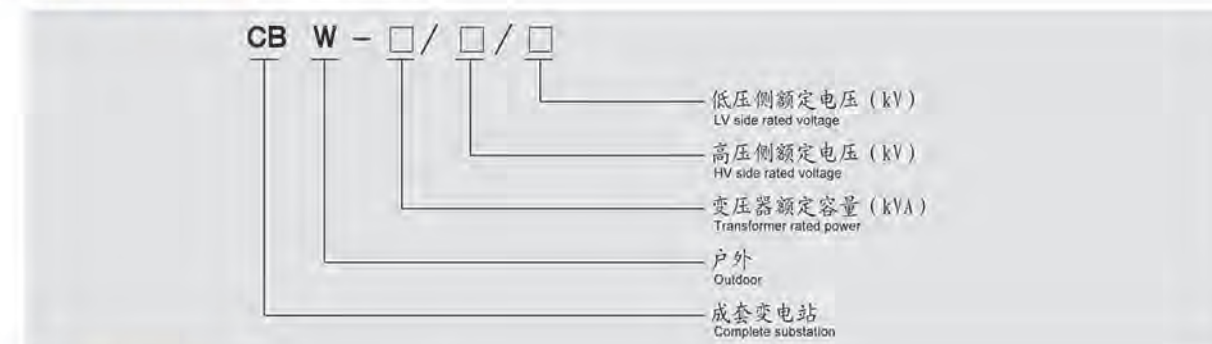
CBW预装式变电站（欧变） CBW prefabricated substation(European style transformer)

1、概述 General

CBW预装式变电站将光伏发电用升压变电站预先在工厂内制造装配，包括升压变压器、高压真空负荷开关—熔断器组合电器、低压开关、内部接线（电缆、母排等）、电源变压器等辅助设备，配置一个公用外壳内，并通过型式试验的一种户外成套变电站。它具有成套性强、便于安装、施工周期短、运行费用低、结构强度高、防腐性能强等优点，完全适用于自然条件比较恶劣的海滩、草原、荒漠等运行环境。

CBW prefabricated substation is a complete set of substations that are preparatory installed and assembled set up substation of photovoltaic power generation in the factory, including booster transformers, high voltage vacuum load switch, switch-fuse combinations, low voltage switches , internal wiring (cable, busbar, etc.)and power transformers, etc., which are arranged in a common enclosure and tested in the form. It is designed with strong complete sets, easy to install, short construction period, low operating costs, high structural strength, strong anti-corrosion performance, environmental protection and energy saving advantages for the bad natural conditions of the poor beach, desert and other operating environment.

2、型号说明 Model Description



3、使用环境 Service environment

- ◆海拔高度一般不超过3000m;
- ◆环境温度一般为：最高温度+42℃，最低温度-40℃；
- ◆风速：户外风速不超过45m/s；
- ◆湿度：日相对湿度平均值不超过95%；月相对湿度平均值不超过90%；
- ◆防震：水平加速度不大于0.4m/s²，垂直加速度不大于0.2m/s²；
- ◆安装环境：周围空气无可燃性气体等明显污染，安装地点无剧烈震动；
- ◆安装地点倾斜度：不大于3°；
- ◆订购本产品超出上述条件的规定时，可与本公司协商。

CBW光伏发电专用升压设备

>> CBW Photovoltaic Power Generation Step-up Equipment

- ◆Altitude is generally not more than 3000 meters;
- ◆Ambient temperature: the maximum temperature +42 °C, the minimum temperature -40 °C;
- ◆Wind speed: outdoor wind speed does not exceed 45m/s;
- ◆Humidity: daily average relative humidity of not more than 95%; monthly relative humidity of not more than 90%;
- ◆Shockproof: the level of acceleration is not greater than 0.4m/s², vertical acceleration is not greater than 0.2m/s²;
- ◆Installation site inclination: not more than 3°;
- ◆Installation environment: the surrounding air without flammable gas and other obvious pollution, the installation site without severe vibration;
- ◆When client's requirements beyond the above conditions, can consult with the Company.

4、产品结构特点 Product structure characteristics

4.1 CBW预装式变电站（油变） CBW prefabricated substation (oil-immersed transformer)

本箱变融合了欧变与美变的优点，更加适合于光伏发电厂的使用，具体有以下特点：

This box type transformer has the advantages of European and American style transformer that is more suitable for the use of photovoltaic power plant. More specific characteristics as below;

- ◆高压开关的隔离刀与灭弧室及熔断器分室放置，解决了一般开关更换熔断器或灭弧室需要停电整条线路的问题，真正实现了单台检修无需停其他风机的性能；
- ◆高压开关至变压器连线用母排连接，解决了用电缆连接带来的运行安全问题；
- ◆借鉴美变的优点，变压器散热片敞开式安装，实现了完全自然通风散热性能，节约了大量的因强迫风带来的电能损失，也杜绝了因强迫通风带来的风扇性能不可靠而容易超温跳闸的缺陷，也实现了带电体全部密封在箱变内，解决了防尘问题；
- ◆变压器的油位计、气体继电器、压力释放等装置均露在外部，能够直观的观察变压器运行状况；
- ◆保护功能完全同于欧变的保护功能；
- ◆由于无变压器室，整机的占地面积相比于欧变减小，变压器美变结构的进出线方式节约了大量的铜材，因此整机成本较欧变低，用户投资减少。

◆High voltage isolation switch, the arc chamber and fuse sub-room sub-room placed to solve the general switch's problem that replace the fuse or interrupter need to power out the whole line and meet realization of a single maintenance without stopping the performance of other fans;

◆High-voltage switch to the transformer connection with the busbar connection to solve the cable connection with the operation of security issues;

CBW光伏发电专用升压设备

>> CBW Photovoltaic Power Generation Step-up Equipment

◆Learning the advantages of American style transformers, the transformer radiator panel with open installation, to achieve a completely natural ventilation and cooling performance, saving a lot of energy due to forced ventilation damage, but also put an end to the fan's performance unreliable and easy over-temperature trip defects caused by forced ventilation; to achieve the charged body completely sealed inside the box-type transformer to solve the dust problem;

◆Transformer oil level meter, gas relay, pressure release and other devices are open-type installation to visually observe the transformer operating conditions;

◆Protection function is exactly the same with the European style transformer protection function;

◆Because there is no transformer room, the whole area of the transformer compared to the European style transformer to reduce the transformer footprint. American transformer structure of the inlet and outlet way to save a lot of copper, so the cost of the machine lower than European style transformer and reduce the user's investment.

4.2 CBW预装式变电站（干变） CBW prefabricated substation (Dry type transformer)

高压开关的隔离刀与灭弧室及熔断器分室放置，解决了一般开关更换熔断器或灭弧室需要停电整条线路的问题，真正实现了单台检修无需停其他风机的性能；

◆高压开关至变压器连线用母排连接，解决了用电缆连接带来的运行安全问题；

◆保护功能完全同于欧变的保护功能；

◆采用免维护型干式变压器，完全杜绝了夏天溢油、冬天补油及渗漏油情况的发生，真正实现了无油化运行；

◆箱体和顶盖为双层结构，可确保防止雨水进入以及防止热辐射增加室内温度；它具有优良的隔热保温性能，保证设备在严寒环境中安全、迅速投入运行；

High voltage isolation switch, the arc chamber and fuse sub-room sub-room placed to solve the general switch's problem that replace the fuse or interrupter need to power out the whole line and meet realization of a single maintenance without stopping the performance of other fans;

◆High-voltage switch to the transformer connection with the busbar connection to solve the cable connection with the operation of security issues;

◆Protection function is exactly the same with the European style transformer protection function;

◆The use of maintenance-free dry-type transformers, completely put an end to the summer oil spill, winter fuel and oil leakage occurred and achieve realization of the oil-free operation;

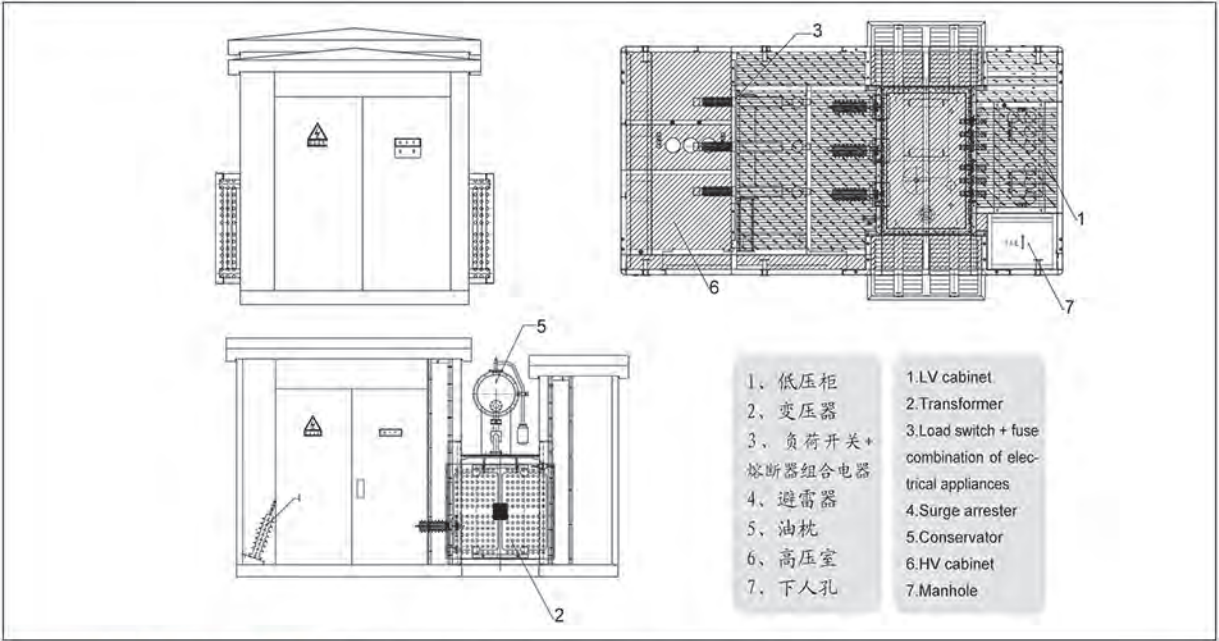
◆Box and roof with the double-layer structure, to prevent that the rain penetration and heat radiation to increase the indoor temperature; it has excellent thermal insulation properties to ensure that the equipment in a cold environment operation safely and quickly;

CBW光伏发电专用升压设备

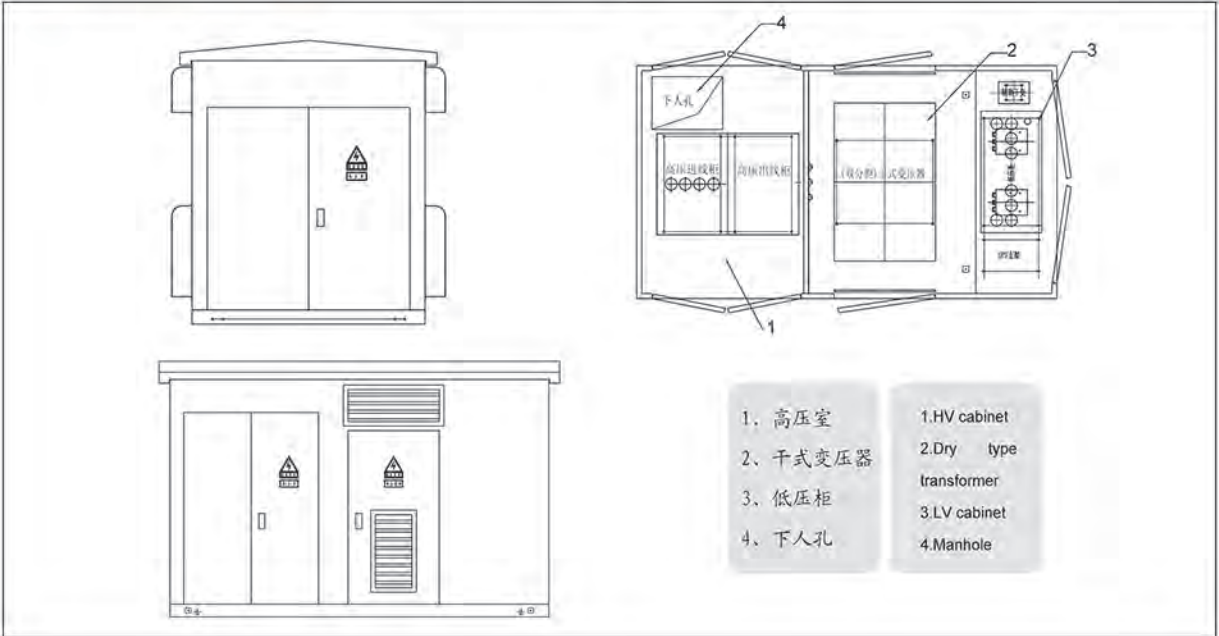
>> CBW Photovoltaic Power Generation Step-up Equipment

5、产品结构外形示意图 Product structure outline schematic diagram

5.1 CBW预装式变电站（油变） CBW prefabricated substation (oil-immersed transformer)



5.2 CBW预装式变电站（干变） Prefabricated substation (dry type transformer)



CBW光伏发电专用升压设备

>> CBW Photovoltaic Power Generation Step-up Equipment

6、主要技术参数 Technical parameters

项 目	Project	单位	Unit	高压开关	Transformer	低压电器	Low voltage electrical appliances
额定电压	Rated voltage	kV	12	40.5	10/0.38	35/0.27/0.27	0.27/0.38
额定容量	Rated power	kVA	800~600		800~600		
额定频率	Rated frequency	Hz	50		50		50
额定电流	Rated current	A	20C	63			
1min工频耐压 1 minute power frequency withstand voltage	相间及对地 Interphase Phase to ground	kV	42	95	35	85	5
	隔离断口 Isolated fracture	kV	48	110			
雷电冲击耐压 Lightning impulse withstand voltage	相间及对地 Interphase Phase to ground	kV	75	185	75	220	12
	隔离断口 Isolated fracture	kV	85	215			
额定短路开断电流(有效值) Rated Short-circuit Breaking Current(rms)		kA		31.5			50
额定短时耐受电流(峰值) Rated short-time withstand current (rms)		kA	20(4S)	20(4S)			40(1S)
额定短路关合电流(峰值) Rated short-circuit closing current (peak)		kA	50	50			
额定峰值耐受电流 Rated peak withstand current		kA	50	50			
防护等级	Protection class	IP33					
噪声水平	Noise level	≤55dB					

7、元器件选型表 Component selection table

容量 Capacity	高压开关 HV switch		高压熔断器 HV fuses		高压避雷器 HV surge arrester		低压开关 LV switch	辅助变压器 Auxiliary transformer
	12	40.5	12	40.5	12	40.5		
600	FZRN25-12 VTK-12	YFZ- RN35-40.5 D/T-31.5	XRNT-12/63	XRNT-40.5/25	HY5WZ-17/4 5、 TBP-B-17F	HY5WZ-51/ 134、 TBP-B-51F	CW1断路器 KFW2断路器	SG-63/0.38 SG-3/0.38容 量可根据需 要确定 Capacity can be deter- mined according to cus- tomer's requirements
660			XRNT-12/63	XRNT-40.5/25				
750			XRNT-12/80	XRNT-40.5/31.5				
900			XRNT-12/100	XRNT-40.5/40				
1400			XRNT-12/125	XRNT-40.5/50				
1600			XRNT-12/160	XRNT-40.5/63				

元器件型号可根据用户要求进行选型 Component models can according to user's requirements

8、产品生产现场

Product production site



CBW箱逆变升压（储能）一体升压设备

>> CBW box inverter booster (energy storage) one booster equipment

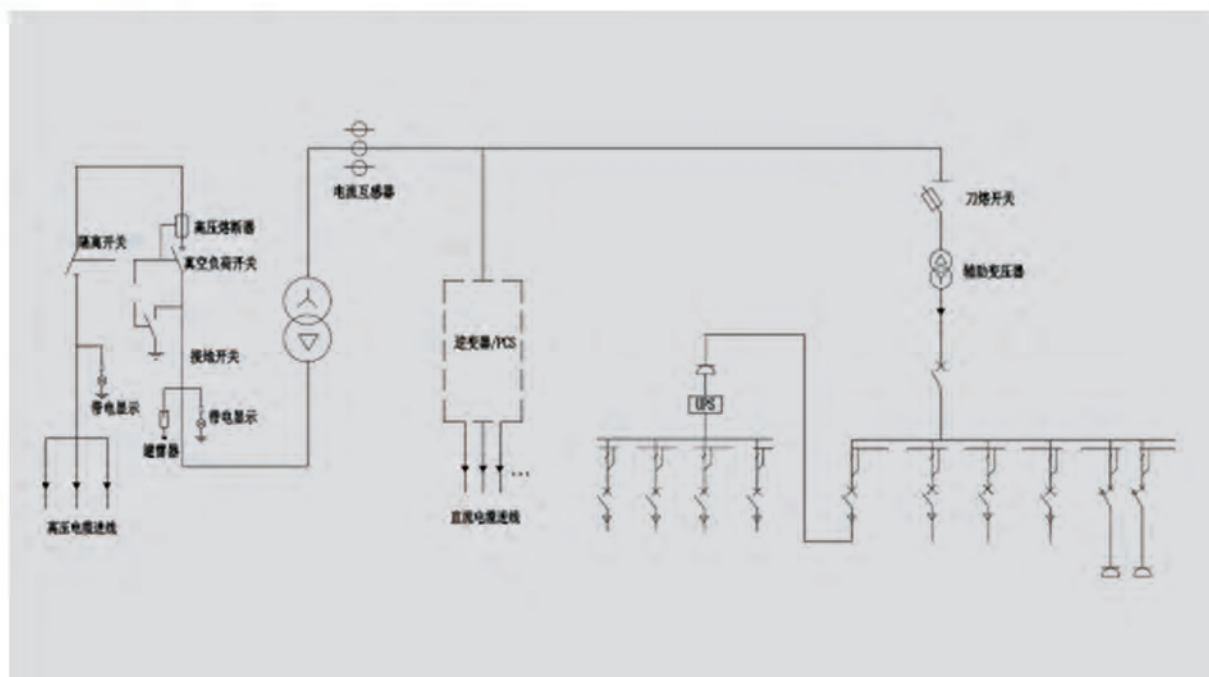
1、概述

欧式（华式）箱逆变（储能）一体升压设备将欧式（华式）箱变与逆变器（PCS）在工厂内集成为一体，并完成整体调试，可配套干式变压器、油浸式变压器，保护功能齐全，性价比高，安装方便，占地少，成本低，在光伏发电及储能行业应用广泛。

GENERAL

The European Type (Chinese) box inverter (energy storage) integrated booster equipment integrates European (Chinese) box transformer and inverter (PCS) in the factory, and completes the overall commissioning, can be matched with dry-type transformers, oil-immersed transformers, complete protection functions, high cost performance, easy installation, small footprint, low cost, widely used in photovoltaic power generation and energy storage industry.

2. 典型方案图 Typical scheme diagram



CBW箱逆变升压（储能）一体升压设备

>> CBW box inverter booster (energy storage) one booster equipment

3. 产品外观图 Product appearance photos



CBW系列箱式变电站(欧式)

>> CBW Series Box Type Substation (European type)

外观款式 Appearance Style

CBW箱式变电站(欧式)的外观, 需要与所安放的环境和谐, 我公司视箱式变电站(欧式)的外观为融合环境的艺术设计与变压器的功能同等重要。

我公司可以满足用户特殊环境的外观创新设计与制造。

The appearance of CBW series box type substation (European type) need consistent with the site environment. The appearance designed by our company of CBW series box type substation also very important as the transformer function.

Our company can meet the user's special environmental appearance innovative design or manufacture requirements.



CBW系列箱式变电站(欧式)

>> CBW Series Box Type Substation (European type)

运行维护 Operation and maintenance

1、本箱变装置有温度自动控制设备, 在运行前应按规定调整数值, 使其安全可靠、正常运行。

2、检修高压开关、避雷器和熔断器时应正确按操作程序进行, 所有元器件的维修, 按其说明书进行。

1. The box-type transformer device has a temperature automatic control equipment, before operation that should be adjusted according to the provisions of the value to make it safe and reliable running.

2. Maintenance of high voltage switches, arrester and fuse should be properly operated according to the procedures. All components' maintenance should according to its instructions.

订货须知 Ordering instructions

用户订货时应提供如下资料:

1、供电系统的特征: 额定和最高电压; 中性点接地方式。

2、运行条件: 最高和最低空气温度、湿度、风压、凝露和污秽等级、海拔高度, 危及设备良好运行的各种因素, 如蒸汽、潮气、烟雾、爆炸性气体、过多的尘埃和盐污、地震或其它外界因素引起危及设备的震动等。

3、组合式变电站的特征;

3.1 高低压侧的额定电压;

3.2 安装方式: 户内或户外;

3.3 相数;

3.4 高、低压侧的额定绝缘水平;

3.5 高、低压侧的额定短时耐受电流;

3.6 额定短时持续时间;

3.7 额定峰值耐受电流 (如果不是2.5倍短时耐受电流时, 应给出具体值);

3.8 各种元件的型号及额定参数 (如高、低压开关操作类型, 若为电动操作应注明或直流操作电压、变压器、连接母线型号);

3.9 主接线图;

3.10 外壳表面材料及颜色选择;

3.11 最大允许尺寸及布置要求。

Clients should provide the following information when ordering:

1. Power supply system features: rated and maximum voltage; neutral point grounding.

2. Operating conditions: maximum and minimum air temperature, humidity, wind pressure, condensation and pollution level, altitude, variety of factors endanger the equipment to run, such as steam, moisture, smoke, explosive gas, excessive dust and salt, earthquakes or other external factors cause damage to the equipment and so on.

3. Characteristics of modular substations

3.1 HV/LV side rated voltage

3.2 Installation: indoor or outdoor;

3.3 Phase number

3.4 HV/LV side rated insulation level

3.5 HV/LV side rated short-time withstand current

3.6 Rated short duration

3.7 Rated peak withstand current (if not 2.5 times short-time withstand current, please given specific value)

3.8 Various types of components and rated parameters (such as high and low voltage switch operation type, if choose the electric operation should be specified or DC operating voltage, transformer, connecting bus model);

3.9 Main wiring diagram

3.10 Shell surface material and color selection

3.11 Maximum allowable size and layout requirements

ZGS系列箱式变电站（美式）

>> ZGS Series Box-type Substation (American style)

概述 General

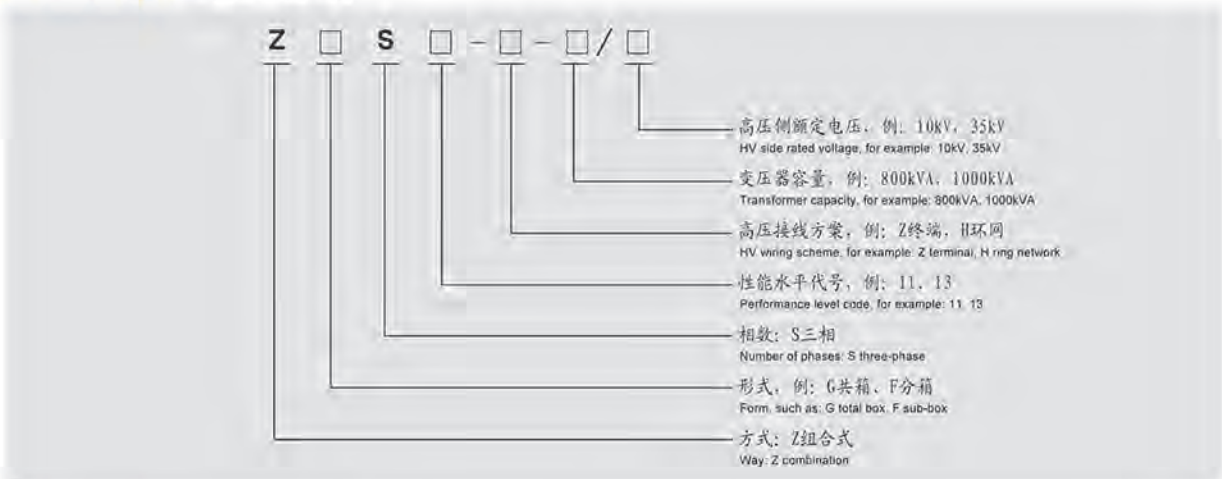
ZGS-12/0.4系列预装式变电站（又称美式箱变），具有供电可靠、结构合理、安装迅速、灵活、操作方便、体积小、造价低等卓越性能，既可用于户外，又可用于户内，广泛应用于工业园区、居民小区、商业中心以及高层建筑等各种场所。

美式箱变与国内组合式箱变的不同在于，美式箱变将变压器铁芯、高压负荷开关、保护用熔断器等设备统一设计，放在同一油箱中，因而体积小。

ZGS-12 / 0.4 series prefabricated substation (also known as American box type substation), with the features of reliable power supply, reasonable structure, rapid installation, flexible, easy to operate, small size, low cost performance which is both for outdoor and indoor and widely used in industrial parks, residential areas, commercial centers and high-rise buildings and other places.

The differences of American box type substation and the domestic combination box type substation is that the American box type substation treat transformer core, high pressure load switch, protective fuse and other equipment unified design into the same tank, and thus with small size.

型号含义 Model meaning



产品特点 Product features

- ◆全密封、全绝缘结构、体积小、结构紧凑，仅为同容量欧式箱变的1/3左右，可靠保证人身安全；
- ◆可用于环网和终端供电方式。肘型电缆接头可在200A负荷电流下多次拔插，在紧急情况下作负荷开关使用，同时具有隔离开关的特点；
- ◆采用双熔丝全范围保护方式，大大降低运行成本；
- ◆箱变采用防腐设计和特殊喷漆处理，适用于各种恶劣环境，如多暴风雨和高污染地区；
- ◆采用Dyn11接法，有中性点不漂移、噪音低、防雷性能好等优点；
- ◆低压侧加装智能欠压控制器，在低压母线出现不正常电压时切断电源保证安全供电。

ZGS系列箱式变电站（美式）

>> ZGS Series Box-type Substation (American style)

◆ Fully sealed, all insulated structure, small size, compact structure, for only about 1/3 of the same capacity European box-type substation to ensure reliable guarantee of personal safety.

◆ The product can be used for ring network and terminal power supply. The elbow cable connector can be plugged multiple times at 200A load current, used as load switch in case of emergency, and also has the characteristics of disconnecter.

◆ Full range of double fuse protection, greatly reducing operating costs.

◆ Box-type substation with anti-corrosion design and special paint treatment, suitable for a variety of harsh environments, such as multi-storm and high pollution areas.

◆ Dyn11 connected with a neutral point does not drift, low noise, lightning protection and other advantages.

◆ Low-voltage side with the installation of intelligent undervoltage controller, low voltage bus in the abnormal voltage cut off the power to ensure safe power supply.

主要技术参数 Main technical parameter

项目 Project	单位 Unit	技术参数 Technical Parameters
额定电压 Rated voltage	原边 Primary side	kV
	副边 Secondary side	10 0.4
最高工作电压（原边） Maximum operating voltage (Input voltage side)	kV	12
额定频率 Rated frequency	Hz	50
额定容量 Rated capacity	kVA	80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600
1分钟工频耐压 1 minute power frequency withstand voltage	kV	35
BIL冲击耐压 BIL impulse withstand voltage	kV	75
冷却方式 Cooling method	-	油浸自冷式 ONAN
ELSP熔断器遮断电流 ELSP fuse interrupts current	kA	50
插入式熔断器遮断电流 Plug-in fuse interrupts current	kA	2.5
无载调压 Off-circuit tap-changer	kV	10±2×2.5%
环境湿度 Environment humidity	℃	-45~+40
允许油顶层温升 Allow temperature rise of top oil	k	50
噪音等级 Noise level	dB	50
防护等级 Protection class	-	IP43
油箱机械强度 Tank mechanical strength	kPa	50

注：以上数据如有改动，恕不另行通知。 Note: The above data is subject to change without notice.

ZGS系列箱式变电站(美式)

>> ZGS Series Box-type Substation (American style)

标准使用环境 Standard service environment

- ◆海拔高度一般不超过3000m;
 - ◆环境温度一般为: 最高温度+42℃, 最低气温-45℃;
 - ◆空气湿度: 日相对湿度平均值≤95%; 月相对湿度平均值≤90%;
 - ◆防震水平: 水平加速度≤0.3m/s², 垂直加速度≤0.15m/s²;
 - ◆风速: ≤35m/s;
 - ◆污秽等级: IV级
 - ◆安装地点: 安装在没有火灾, 没有爆炸或剧烈震动, 通风良好, 无腐蚀性气体腐蚀金属的场所, 地面倾角不超过5°;
 - ◆当上述正常使用条件不满足要求时, 用户与制造厂协商解决。
-
- ◆Altitude is generally not more than3000m;
 - ◆Ambient temperature: the maximum temperature +42 ℃, the minimum temperature -45℃;
 - ◆Humidity: daily average relative humidity no more than 95%; monthly relative humidity no more than 90%;
 - ◆Shockproof ability: the level of acceleration is not greater than 0.3m / s², vertical acceleration is not greater than 0.15m / s²;
 - ◆Wind speed: ≤35m/s
 - ◆Pollution Level: IV
 - ◆Installation location: installed in the absence of fire, no explosion or severe vibration, well ventilated, non-corrosive gas corrosion metal sites, the ground inclination of not more than 5 °;
 - ◆When client's requirements beyond the above conditions, can consult with the Company.



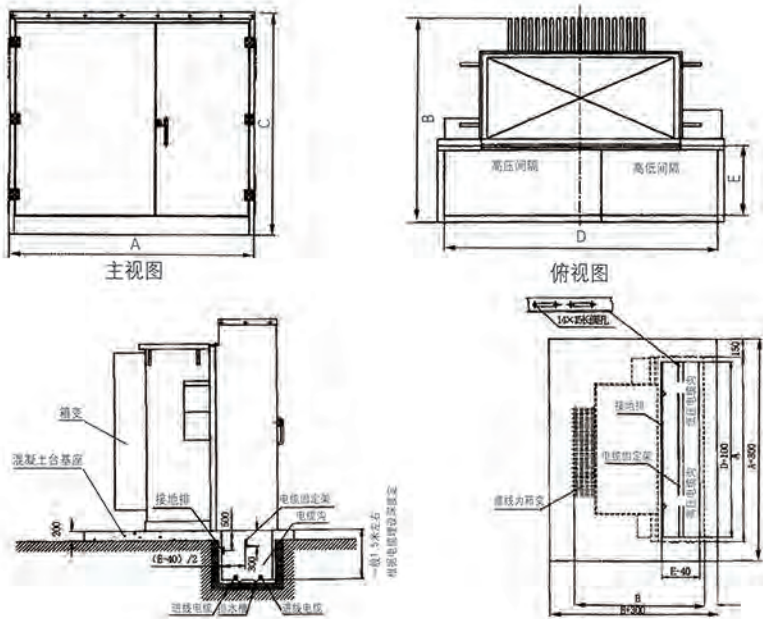
ZGS系列箱式变电站(美式)

>> ZGS Series Box-type Substation (American style)

外形尺寸 Outline dimensions

容量 (kVA) Capacity	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	重量(kg) Weight
100-160	2500	1450	1750	2300	460	2105
200-315	2500	1450	1750	2300	460	2920
400-500	2500	1450	1750	2300	460	3785
630-800	2500	1450	1750	2300	460	4360
1000	2500	1450	1750	2300	460	5000

地基尺寸 Foundation size



- 说明:
- 1、电缆沟内壁及基础平台用1:25水泥砂浆抹封, 厚度为20, 表面须平整;
 - 2、电缆沟底面须向排污口倾斜, 以免积水;
 - 3、接地网分别用Φ12圆钢或30×4扁钢从两侧引入基础部与预埋钢板焊平;
 - 4、基础深度由用户定。

Description:

1. Cable trench wall and the base platform with 1:25 cement mortar smear, the thickness of 20, the surface must be flat;
2. The cable trench bottom tilt to the sewage outfall, so as no water;
3. Grounding grid with Φ12 round steel or 30 × 4 flat steel from both sides lead into foundation and embedded steel plate flat;
4. The basis of the depth as the user set.



ZGS系列箱式变电站（美式）

>> ZGS Series Box-type Substation (American style)

产品结构 Product structure

◎高压间隔 HV interval

高压间隔内有高压线端子、负荷开关操作手柄、无载调压分接开关、插入式熔断器、压力释放阀、油温表、压力表、油位计、注油孔、放油阀等。

High voltage interval include high voltage line terminal, load switch operation handle, no load tap changer, plug-in fuse, pressure release valve, oil pressure gauge, pressure gauge, oil level gauge, oil hole, oil drain valve etc.

◎负荷开关 Load switch

油浸负荷开关是三相联动开关，具有弹簧操作机构，可完成负荷开断和关合操作，负荷开关分为二位置 and 四位置两种，由三个二位置开关可以组成环网型开关，四位置开关本身具有环网功能，因此可用于双电源或环网供电方式。

Oil immersed load switch is three-phase linkage switch with spring operating mechanism. It can complete load open and close operation. The load switch is divided into two and four positions that three two-position switch can form a ring network switch while four-position switch itself has a ring function, thus this can be used for double power or ring network power supply mode.

开关类型 Switch type	二位置 Two-position switch	四位置 Four-position switch
额定电流 (A) Rated current	315	315
额定电压 (kV) Rated voltage	12	12
雷电冲击耐压 (kV) Lightning impulse withstand voltage	75	75
1min工频耐压 (kV) 1min power frequency with-stand voltage	相对地 Phase to ground	42
	断口 Fracture	48
持续工作电流 (A) Continuous operating current	300	300
负荷开关电流 (2S) Load switch current	300	600
短时耐受电流 (kA) Short time withstand current	12.5	12.5
额定短路关合电流 (kA) Rated short circuit closing current	31.5	31.5

◎熔断器 Fuses

美式箱变由后备保护熔断器与插入式熔断器BAY-O-NET串联起来提供保护，保护原理先进，经济可靠，操作简便。

American box-type substation by the backup protection fuse and plug-in fuse BAY-O-NET series to provide protection, advanced protection principle, economical and reliable, easy to operate functions.

ZGS系列箱式变电站（美式）

>> ZGS Series Box-type Substation (American style)

后备保护熔断器是限流熔断器，安装在箱体内部，只在箱变内部发生故障时动作，用于保护高压线路。BAY-O-NET熔断器是油浸式插入型熔断器，在二次侧发生短路故障、过负荷及油温过高时熔断。BAY-O-NET熔断器熔断后，可以在现场方便地更换熔丝。

Backup protection fuse is a current limiting fuse and installed in the box inside, only when the internal failure of action in the box to protect HV lines. BAY-O-NET fuse is an oil-immersed plug-in fuse which will fuse when the secondary side of the short-circuit fault, overload and oil temperature is too high. After BAY-O-NET fuse blown users can easily replace the fuse in the field.

◎低压间隔 LV interval

在低压配置电柜中，安装了智能型欠电压控制器，它具有识别变电站低压母线不正常电压的功能，当高压一相或两相熔断造成变压器低压侧电压不正常时控制器发出动作信号，使断路器跳闸。当变压器低压侧三相电压均低于正常电压的50%时，控制器不发动作信号，这样可避免因10kV高压线路跳闸或停电检修致使低压开关全部跳闸。另外，可以根据用户的要求加装自动无功补偿装置和带有遥测、遥讯功能的综合配电测试仪。

In the low-voltage configuration cabinet, the intelligent undervoltage controller is installed, which has the function of recognizing the abnormal voltage of the substation low-voltage bus. When the high-voltage one phase or two-phase fuse caused the voltage is not normal, then the controller sends an action signal to the circuit breaker trip. When the transformer's three phase voltage of low-voltage side are all lower than 50% of the normal voltage, the controller does not trigger the signal, so as to avoid 10kV high voltage line trip or all the low-voltage switches are tripped due to power failure maintenance. In addition, according to the user's request to install automatic reactive power compensation device and the integrated power distribution tester with telemetry, remote communication function.

主要附件 Main accessories

◎肘型电缆插头 Elbow cable plug

肘型电缆插头上有电容型测试点，可安装带电指示器。通过测试点可以测量线路电压，满足快速查找故障或验电、试验、核相的要求。

The elbow cable connector has a capacitive test point that can be fitted with a live indicator. Through the test point can measure the line voltage, to meet the fast search failure or electricity, test, nuclear phase requirements.

ZGS系列箱式变电站(美式)

>> ZGS Series Box-type Substation (American style)

◎高压接线端子 High voltage terminal block

高压接线端子配有套管插座、单通套管接头、可带负荷拔插200A肘型插头，将带电部分密封在绝缘体内，形成全绝缘结构，端子表面不带电，可靠保证人身安全。

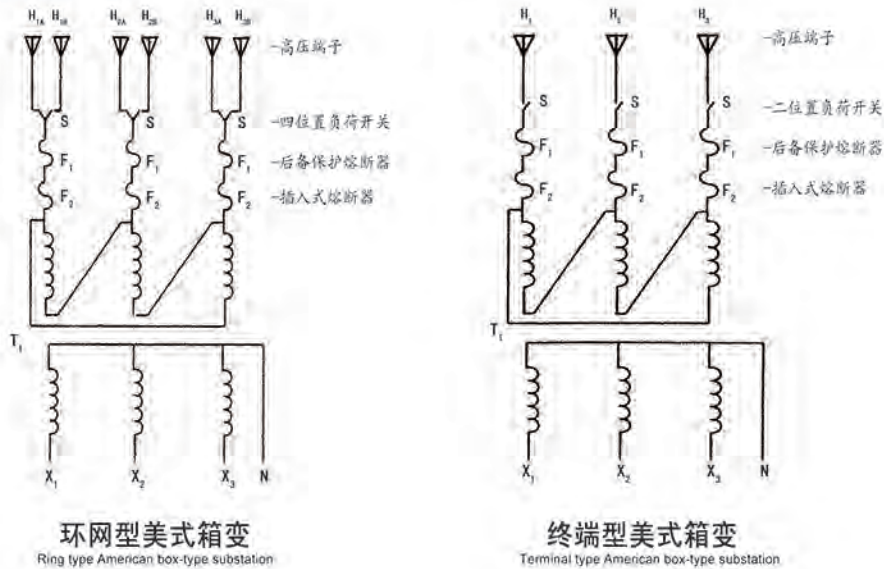
The high-voltage terminal block is equipped with a casing socket, a single-pass pipe fitting, and a 200A elbow plug with load. The live part is sealed in the insulator to form a fully insulated structure. The terminal surface is not charged and is reliable.

◎油位表 Oil level gauge

◎油温表 Oil temperature meter

常见接线方式 Common wiring mode

1、高压主回路图方案 High voltage main circuit diagram scheme



注 Note:

- | | | |
|-----------|----------------------------------|--|
| H1A---H3A | A 路高压端子
high voltage terminal | F ₁ 后备保护熔断器
backup protection fuse |
| H1B---H3B | B 路高压端子
high voltage terminal | F ₂ 插入式熔断器
plug-in fuse |
| S | 负荷开关
Load switch | |

ZGS系列箱式变电站(美式)

>> ZGS Series Box-type Substation (American style)

2、低压主回路图方案 Low voltage main circuit diagram scheme

编号 No.	001	002	003	004
主回路 方案图 The main circuit diagram				
主要 元件 Major components	主开关CM1 (TM30) -630			主开关CM1 (TM30) -630
	CM1-400/3 (或400A以下) ×4	CM1-400/3 (或400A以下) ×4	CM1-400/3 (或400A以下) ×4	
	TM30-400/3 (或400A以下) ×4	TM30-400/3 (或400A以下) ×4	TM30-400/3 (或400A以下) ×4	TM30-400/3 (或400A以下) ×4
	DZ20- 400/3 ×1+200/3 ×3	DZ20-400/3 ×1+200/3 ×3	DZ20- 400/3 ×1+200/3 ×3	DZ20-400/3 ×1+200/3 ×3

编号 No.	005	006	007	008
主回路 方案图 The main circuit diagram				
主要 元件 Major components	主开关CM1 (TM30) -630			主开关CM1 (TM30) -630
	CM1-400/3 (或400A以下) ×5	CM1-400/3 (或400A以下) ×5	CM1-400/3 (或400A以下) ×5	CM1-400/3 (或400A以下) ×5
	TM30-400/3 (或400A以下) ×5	TM30-400/3 (或400A以下) ×5	TM30-400/3 (或400A以下) ×5	TM30-400/3 (或400A以下) ×5
	DZ20- 400/3 ×1+200/3 ×4	DZ20-400/3 ×1+200/3 ×4	DZ20- 400/3 ×1+200/3 ×4	DZ20-400/3 ×1+200/3 ×4

注：以上方案仅供参考，我公司可根据客户要求，提供其它最佳配置。

Note: the above plan is for reference only. Our company can provide other best configuration according to customer's requirement.

风力发电专用升压设备(美变)

>> Special step-up equipment for wind power generation (American style transformer)

风力发电用组合式变压器（美变）

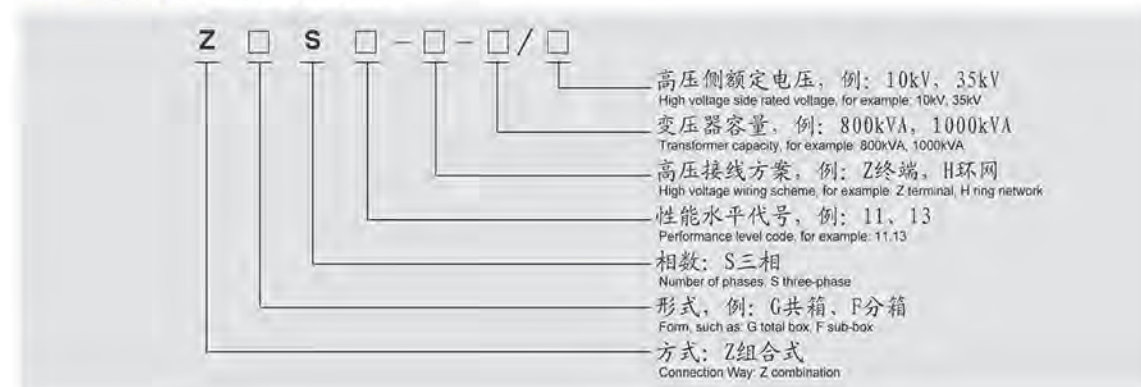
Combined transformer for wind power generation (American style transformer)

1、概述 General

风力发电用组合式变压器，是将升压变压器器身、开关设备、熔断器、分接开关及相应辅助设备组合的变压器，高压开关、熔断器均进入油箱，整体外形尺寸较小，其结构形式与90年代从美国引进的箱变相似，行业内称为“风电美变”。按产品结构及元件配置可分为两种，一种是全绝缘分箱式产品；一种是高压采用干式套管出线的共箱式产品。

Combined transformer for wind power generation, the step-up transformer body, switch transformer, fuse, switch and corresponding auxiliary equipment combination, high voltage switch, fuse into the tank, the overall size is small, its structure and the introduction of the United States from 90s the case is similar to that of the industry called "wind beauty". Box-type products can be divided into two kinds according to the product structure and component configuration. One is the full insulated box-type product, and the other is a box-type product with high pressure adopting dry bushing outlet.

2、型号说明 Model Description



3、使用环境 Service environment

- ◆海拔高度一般不超过3000米；
- ◆环境温度一般为：最高温度+42℃，最低温度-45℃；
- ◆湿度：日相对湿度平均值不超过95%；月相对湿度平均值不超过90%；
- ◆风速：户外风速不超过45m/s；
- ◆防震：水平加速度不大于0.3m/s²，垂直加速度不大于0.15m/s²；
- ◆安装地点倾斜度：不大于3°；
- ◆安装环境：周围空气不受腐蚀性、可燃性气体等明显污染，安装地点无剧烈震动；
- ◆订购本产品超出上述条件的规定时，可与本公司协商。

风力发电专用升压设备(美变)

>> Special step-up equipment for wind power generation (American style transformer)

- ◆Altitude is generally not more than 3000 meters;
- ◆Ambient temperature is generally: the highest temperature +42℃, the minimum temperature of -45℃;
- ◆Humidity: daily average relative humidity of not more than 95%; monthly relative humidity of not more than 90%;
- ◆Wind speed: outdoor wind speed does not exceed 45m/s;
- ◆Shockproof: horizontal acceleration is not greater than 0.3m/s², the vertical acceleration is not greater than 0.15m/s²;
- ◆Installation inclination: no more than 3°;
- ◆Installation environment: the surrounding air out from corrosive, flammable gas and other obvious pollution, the installation site without severe vibration;
- ◆When ordering this product beyond the above conditions, it may consult with the Company.

4、产品结构特点 Product structure characteristics

- ◆全绝缘分箱式组合式变压器12kV、40.5kV侧出线采用全绝缘电缆预制接头，以及可触摸插拔式避雷器，整个产品无裸露的高压带电体，防护等级很高，安全性可靠；
- ◆全绝缘分箱式组合变压器与高压组件置于两个相互独立的箱体。既解决了对变压器的油污染的问题，又实现了高压组件与变压器可以分别检修；
- ◆12KV产品采用插入熔断器加后备保护熔断器保护；40.5kV产品采用插入式全范围保护熔断器保护；
- ◆无渗漏，每台箱体均经过50kpa/12小时的密封试验保证油箱密封无渗漏；
- ◆高压采用干式套管出线的共箱式组合式变压器，接线方便，高压可以实现较多的进出线回路，且成本较低；
- ◆设备外壳采用严格的涂装工艺进行喷涂，并喷涂防紫外线面漆，户外耐候性能强；
- ◆变压器没有单独的外壳，散热效果好。

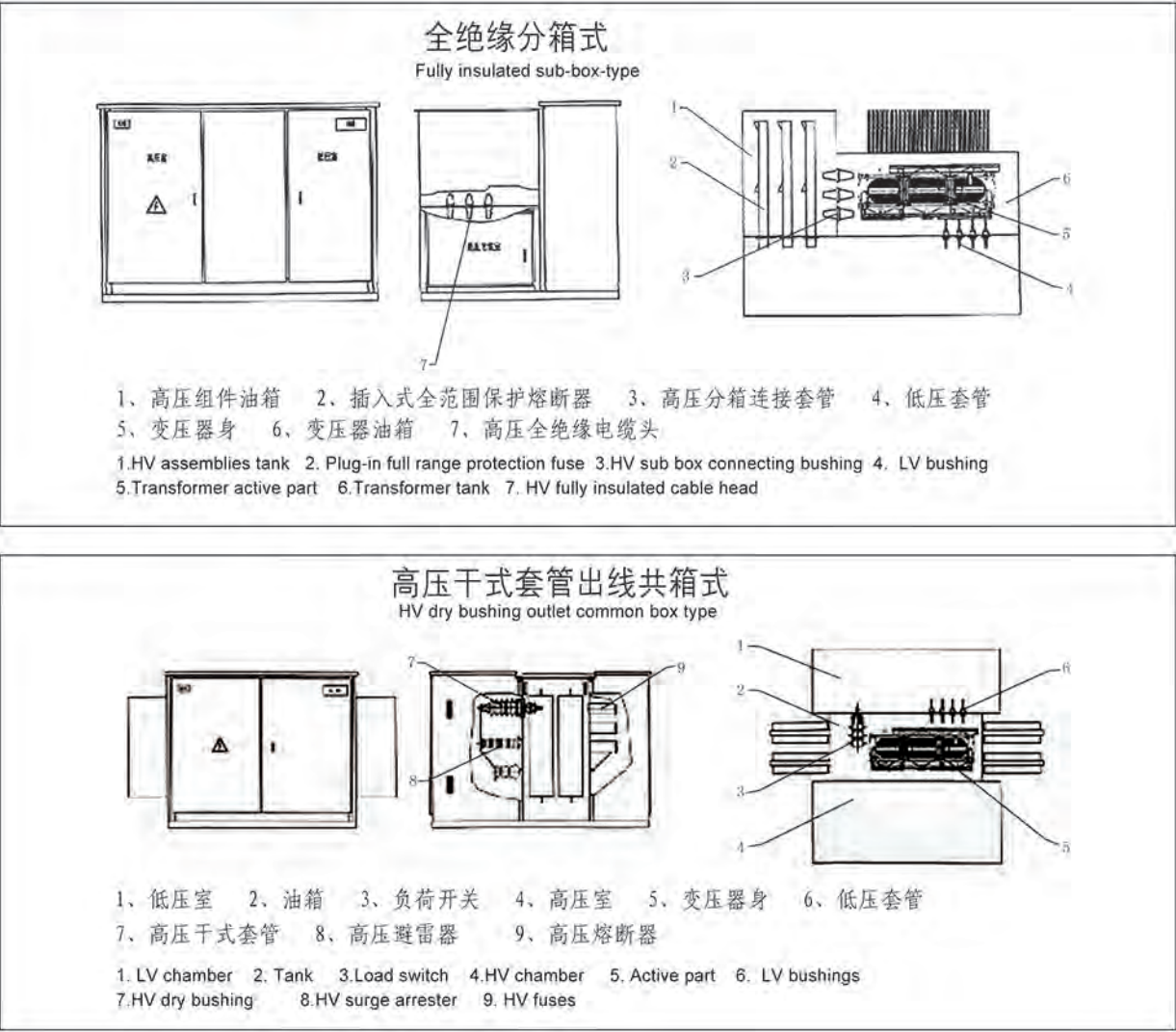
- ◆Full insulation sub-box modular transformer 12kV, 40.5kV side outlet with all insulated cable prefabricated joints, and touchable plug-in arrester, the entire product without exposed high-voltage charged body, high protection level, safe and reliable;
- ◆The fully insulated sub-box combination transformer and the high pressure assembly are housed in two separate tanks. Both to solve the problem of oil pollution of the transformer, but also to achieve a high-voltage components and transformers can be individually repaired;
- ◆12KV products using plug-in fuse plus backup protection fuse protection; 40.5kV products using plug-in full range protection fuse protection;

风力发电专用升压设备（美变）

>> Special step-up equipment for wind power generation (American style transformer)

- ◆No leakage, each box are after 50kpa / 12 hours of sealing test to ensure that the tank seal no leakage;
- ◆High-voltage dry-type bushing leads with a total box-type modular transformer, easy wiring, high pressure can achieve more in and out of the loop, and the cost is low;
- ◆Equipment shell with a strict coating process for spraying, and anti-Ultraviolet rays finish, outdoor weathering performance;
- ◆Transformers do not have a separate shell, good heat dissipation.

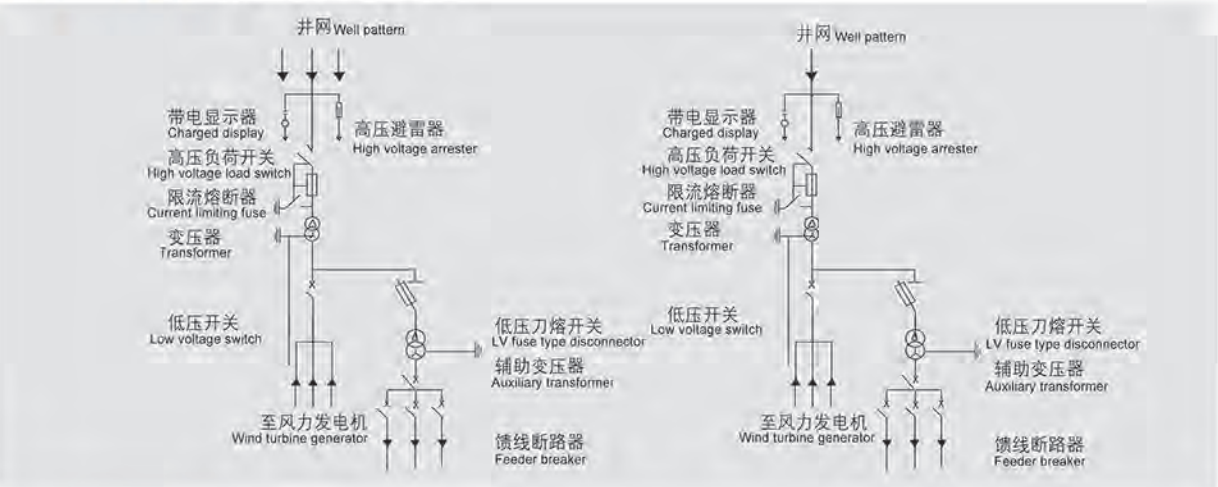
5、产品结构外形示意图 Schematic diagram of product structure



风力发电专用升压设备（美变）

>> Special step-up equipment for wind power generation (American style transformer)

6、典型方案图 Typical scheme diagram



7、元器件选型表 Component selection chart

容量 Capacity	高压开关 High voltage switch 40.5 (kV)	高压熔断器 High voltage fuse 40.5 (kV)	高压避雷器 High voltage arrester 40.5 (kV)	低压开关 Low voltage switch	辅助变压器 Auxiliary transformer
600	BYF1-40.5 LS2B338H3	XRNT-40.5/25	HY5WZ-51/134 TBP-B-42	CW1断路器 KFW2断路器	SG-63/0.69 SG-3/0.69 容量可根据风 机型式确定 The capacity can be determined according to the type of fan
660		XRNT-40.5/25			
750		XRNT-40.5/25			
900		XRNT-40.5/25			
1400		XRNT-40.5/40			
1600		XRNT-40.5/50			
2200		XRNT-40.5/63			
2350		XRNT-40.5/63			
2800		XRNT-40.5/80			
3300		XRNT-40.5/80			

元器件型号可根据用户要求进行选型 Component type can be selected according to user requirements

光伏发电专用升压设备(美变)

>> Special Step-up Equipment for Photovoltaic Power Generation (American style transformer)

光伏发电用组合式变压器(美变)

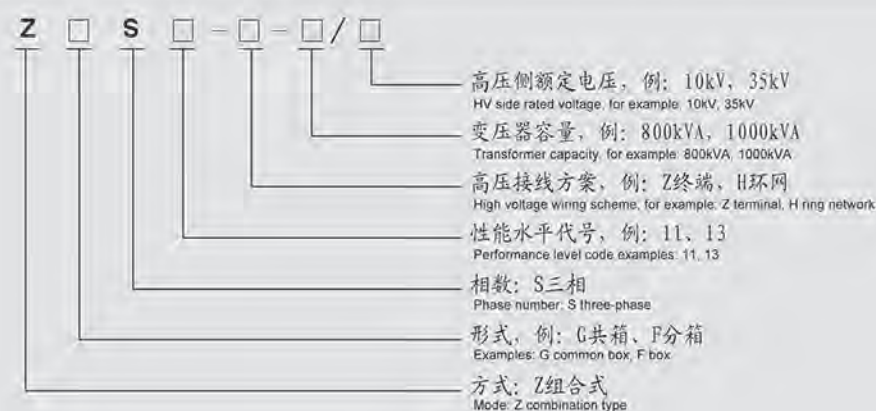
Combined Transformer for Photovoltaic Power Generation (American style transformer)

1、概述 General

光伏发电作为一种清洁的能源生产方式，在国内外得到迅猛的发展。Z□S-ZG-□/□系列组合式变压器正是为满足日益增长的光伏发电的供电要求，在公司生产35kV组合式变压器基础上，消化吸收国内外的先进技术结合国内需求自选开发的系列产品。该产品是将变压器，负荷开关，高压熔断器安装在变压器的箱体内，利用变压器的绝缘油作为整个产品的绝缘和散热介质，油箱采用全密封结构，具有体积小、重量轻、安装方便等优点。光伏发电用组合式变压器主要分为双绕组和轴向双分裂两种。其中轴向双分裂高压采用轴向分段绕制、低压采用铜箔绕制的方案，低压两个分支可以单独运行，也可以同时运行和并联运行，在光伏发电中得到了广泛应用。

As a clean energy production mode, photovoltaic power generation has been developed rapidly both at home and abroad. Z-S-ZG-/-series combined transformer is to satisfy the power supply demand of photovoltaic power generation, the company production of 35kV combined transformer based on series of products with domestic demand optional development of digestion and absorption of advanced technology at home and abroad. This product is the transformer, load switch, high voltage fuse mounted on the transformer box, the insulation oil transformer as the product of insulation and cooling medium tank using a fully sealed structure, has the advantages of small size, light weight, convenient installation, etc.. The combined type transformer for photovoltaic power generation is mainly divided into two types of double winding and axial double split. The axial double split high and low voltage winding adopts axial sectional copper foil winding scheme, two branches of low pressure can be run separately, can also be run in parallel and at the same time, has been widely used in photovoltaic power generation.

2、型号说明 Model description



光伏发电专用升压设备(美变)

>> Special Step-up Equipment for Photovoltaic Power Generation (American style transformer)

3、使用环境 Service environment

- ◆海拔高度一般不超过3000米；
- ◆环境温度一般为：最高温度+42℃，最低温度-45℃；
- ◆湿度：日相对湿度平均值不超过95%；月相对湿度平均值不超过90%；
- ◆风速：户外风速不超过45m/s；
- ◆防震：水平加速度不大于0.3m/s²，垂直加速度不大于0.15m/s²；
- ◆安装地点倾斜度：不大于3°；
- ◆安装环境：周围空气不受腐蚀性，可燃性气体等明显污染，安装地点无剧烈震动；
- ◆订购本产品超出上述条件的规定时，可与本公司协商。

- ◆The altitude is generally not more than 3000 meters;
- ◆The ambient temperature is generally the highest temperature +42℃, minimum temperature -45℃;
- ◆The humidity: daily average relative humidity no more than 95%; the average monthly relative humidity no more than 90%;
- ◆The wind speed: outdoor wind speed not exceeding 45m/s;
- ◆The earthquake: the horizontal acceleration is not greater than 0.3m/s², the vertical acceleration is not greater than 0.15m/s²;
- ◆The installation site gradient: less than 3 degrees;
- ◆The installation environment: the surrounding air is not corrosive, flammable gases and other significant pollution, installation site without severe shock;
- ◆The order beyond the conditions of this product regulations, in consultation with the company.

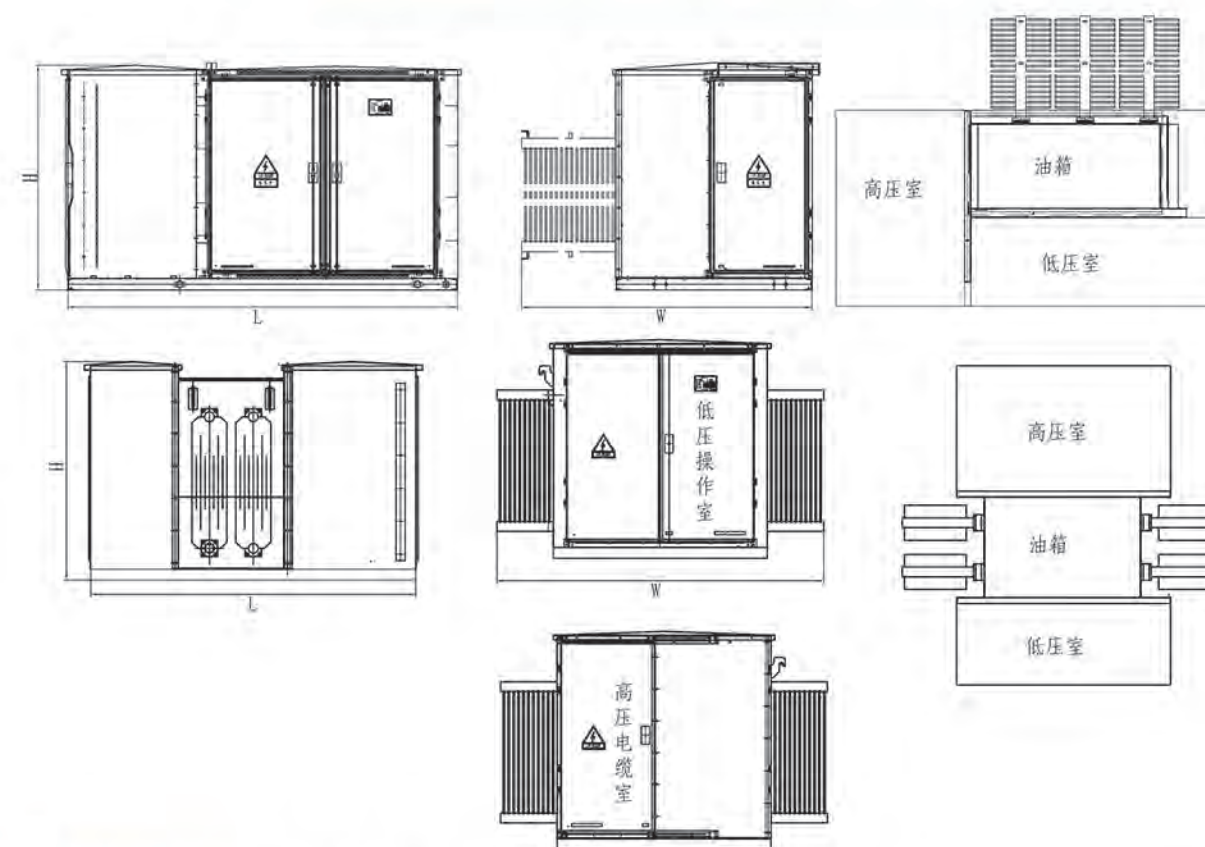
4、产品结构特点 Product structure features

- ◆ZGS-1250/35光伏发电用组合式变压器由高压室、变压器本体和低压室三个部分组成。按“目”字形或“L”字形布置。高压带电体及高压电缆用单独的隔室分开，并加装电磁锁装置，方便安装及维护；
- ◆高压负荷开关采用两工位油浸式负荷开关，12kV产品采用插入式熔断器加后备保护熔断器保护，40.5kV产品采用插入式全范围保护熔断器保护，高压组件与变压器身同在一个油箱内；
- ◆变压器本体采用共箱结构，高低压套管采用侧面出线，方便与高低压电器直接相连，插入式熔断器置于器身的上面，有效的减小了安装空间。散热片安装在变压器本体的两侧，散热效果好，散热片可以是敞开式也可以是封闭式的安装方式。

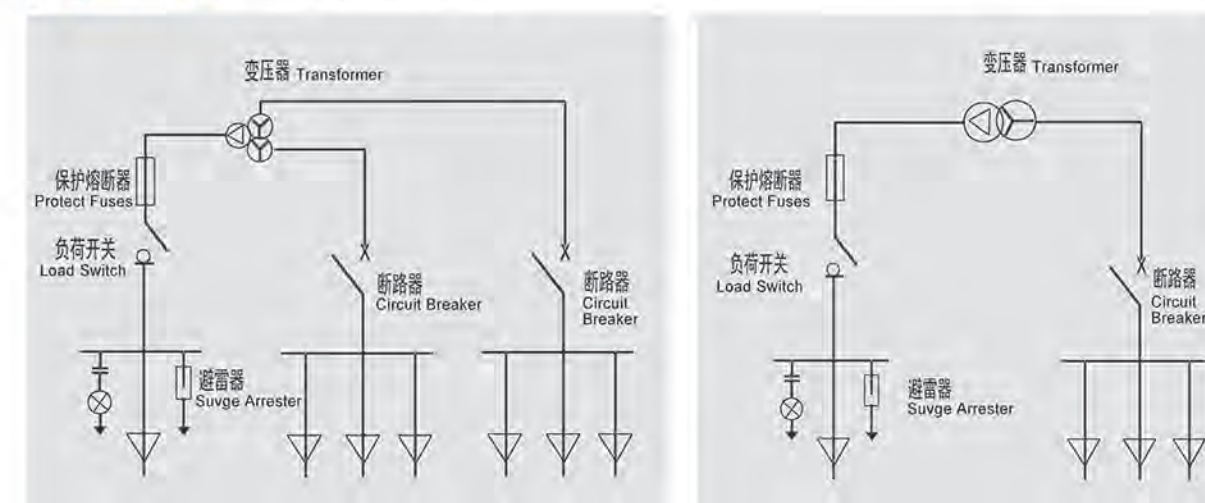
光伏发电专用升压设备(美变)

Special Step-up Equipment for Photovoltaic Power Generation (American style transformer)

- The transformer radiator in direct contact with the outside air, the cooling effect is good.



5、典型方案图 Typical scheme diagram



部分方案, 仅供参考
Some programs are for reference only

光伏发电专用升压设备(美变)

>> Special Step-up Equipment for Photovoltaic Power Generation (American style transformer)

6、元件选型表 Component selection chart

容量 Capacity (kVA)	高压开关 High voltage switch 40.5 (kV)	高压熔断器 High voltage fuse 40.5 ((kV))	高压避雷器 High voltage arrester 40.5 (kV)	低压开关 Low voltage switch	辅助变压器 Auxiliary transformer
600	BYF1-40.5 LS2B338H3	XRNT-40.5/25	HY5WZ-51/134、 TBP-B-42	KFW2断路器 CW1断路器	SG-3/0.38容 量可根据实 际需要确定
660		XRNT-40.5/25			
750		XRNT-40.5/25			
900		XRNT-40.5/25			
1000		XRNT-40.5/31.5			
1100		XRNT-40.5/31.5			
1250		XRNT-40.5/31.5			
1600		XRNT-40.5/40			

元器件型号可根据用户要求进行选型 Component type can be selected according to user requirements

产品生产现场 Product production site



光伏发电专用升压设备(美变)

>> Special Step-up Equipment for Photovoltaic Power Generation (American style transformer)

外观款式 Appearance Style



美式箱逆变升压一体机、储能一体机

>> American box inverter boost all-in-one machine, energy storage all-in-one machine

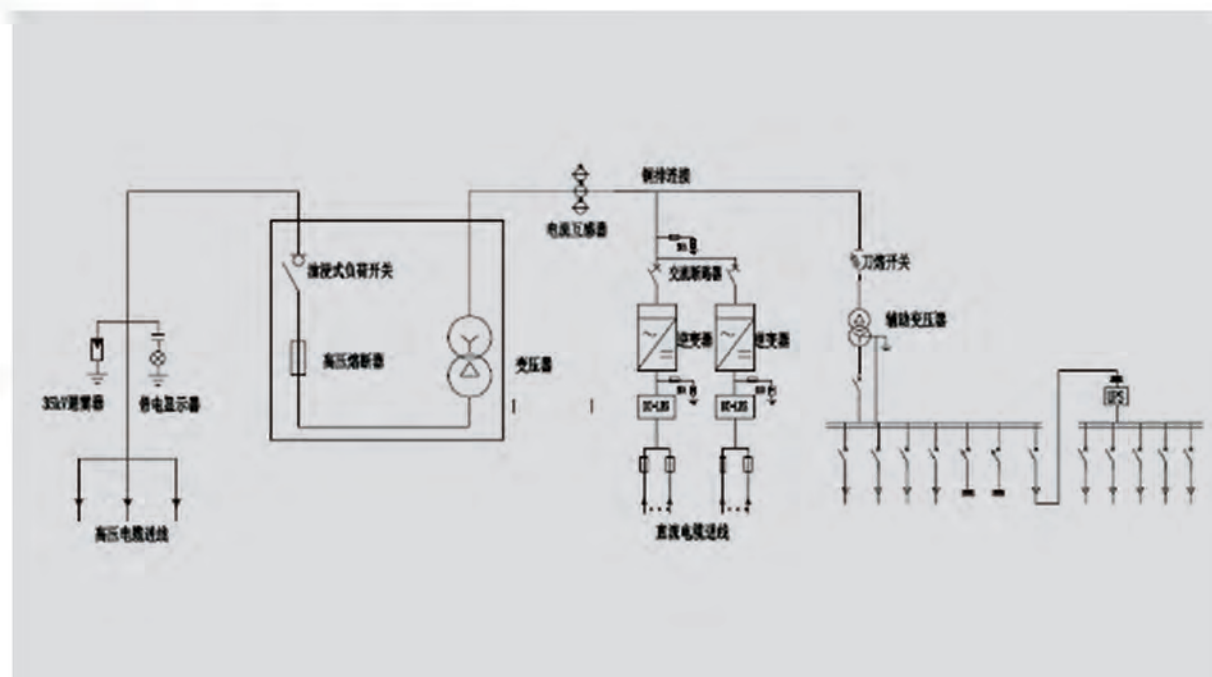
1、概述

美式箱逆变（储能）一体升压设备将美式箱变与逆变器（PCS）在工厂内集成为一体，并完成整体调试，集成度高、体积小、安装方便，可节约土地，降低成本。

GENERAL

The American Type Box Inverter (Energy Storage) Integrated Boosting Equipment integrates the American Box Transformer and Inverter (PCS) into one in the factory and completes the overall commissioning with high integration, small size and easy installation, which can save land and reduce cost.

2. 典型方案图 Typical scheme diagram



美式箱逆变升压一体机、储能一体机

>> American box inverter boost all-in-one machine, energy storage all-in-one machine

3. 产品外观图 Product appearance photos



ZGS系列箱式变电站(美式)

>> ZGS Series Box-type Substation (American style)

订货须知 Order note

用户订货时应提供如下资料:

◎供电系统的特征:

额定和最高电压、中性点接地方式。

◎运行条件:

最高和最低空气温度、湿度、风压、凝露和污秽等级、海拔高度、危及设备良好运行的各种因素,如蒸汽、潮气、烟雾、爆炸性气体、过多的尘埃和盐污、地震或其它外界因素引起危及设备的震动等。

◎组合式变电站的特征:

1. 高、低压侧的额定电压;
2. 安装方式:户内或户外;
3. 高、低压侧的额定绝缘水平;
4. 高、低压侧的额定短时耐受电流;
5. 额定短时持续时间;
6. 额定峰值耐受电流(如果不是2.5倍短时耐受电流时,应给出具体值);
7. 各种元件的型号及额定参数;
8. 主接线图;
9. 箱体的材质要求。

The following information should be provided when ordering:

◎Characteristics of power supply system:

Rated and highest voltage neutral earthing mode.

◎Operation Conditions:

The maximum and minimum air temperature, humidity, air pressure, humidity and pollution level, altitude, various factors endangering the equipment in good condition, such as steam, moisture, smoke, explosive gas, excessive dust and salt, earthquake or other external factors caused by vibration and endanger equipment.

◎Characteristics of combined substation:

1. Rated voltage on the high and low voltage side;
2. Installation: indoor or outdoor;
3. Rated insulation level on high and low voltage side;
4. Rated short time withstands current on high and low voltage side;
5. Rated short duration;
6. Rated peak withstand current (if not 2.5 times short-term withstand current, should be given a specific value);
7. Types and rated parameters of various components;
8. Main wiring diagram;
9. Material requirements of the main body.

产品质量保证和售后服务承诺

>> Product Quality Guarantee and After-sale Service Commitment

我公司坚持以“向社会提供符合时代要求的电气产品”为宗旨,精心设计,精心制造。公司技术力量雄厚,生产设备先进,检测手段完善,产品质量过硬,并于2000年通过了ISO9001质量体系认证。

为适应激烈的市场竞争,满足用户的要求,公司始终坚持以市场为导向,以用户为中心,以快捷周到的服务和过硬的产品质量赢得用户的广泛赞誉。

我公司郑重向广大用户承诺:

35kV及以下变压器、箱变产品使用年限不低于三十年

◎接到招标文件后,根据产品要求评审程序,对用户的要求进行评审。合同签订后,及时组织技术人员分解技术协议,并逐条落实。

◎选用合格的配套厂家,严格按照质量体系的要求对原材料、组部件进行质量控制和检验。

◎本着对用户负责的原则,我们组织各配套件生产厂家按用户合同和协议的要求,生产出优质并让用户满意的配套件。

◎对于用户选购的与我公司产品有关的配套设备,我公司将按用户的要求及时提供与其接口的技术条件和有关资料。

◎35kV及以下变压器、箱变产品的各项性能指标、技术参数完全符合并优于国标要求。

◎35kV及以下变压器、箱变产品在安装投运后3年内若出现因制造问题引起的渗油,我公司负责无偿处理(针对油浸式变压器)对产品在生产过程中出现的关键部件的质量缺陷,不符合合同、协议要求的缺陷,无条件返修或更换。对在安装过程中出现的产品质量问题,最大限度地满足需方工程进度要求,我公司将先处理问题,再分析责任。

◎35kV及以下变压器、箱变产品在生产过程中,欢迎用户来公司监造,并提供一切方便。

◎提供优质的售后服务。免费指导用户安装、调试,产品投运后,客户如提出服务要求,我公司服务人员将在最短时间内(300公里以内24小时,300公里以外72小时)到达现场。

◎我公司已有成熟的定期回访制度,对于在役产品我公司定期以书面形式或到达贵方现场回访。

用户服务热线

电 话: 0086-538-8639656

传 真: 0086-538-8639656

联系人: 翟宝荣

手 机: 13615380311

Product Quality Guarantee and After-sale Service Commitment

The company persists in the tenet of "to supply upated electrical equipment for the society". The company has strong technical force, advanced manufacturing facilities, perfect testing devices, excellent product quality control system and it has passed the ISO9001 quality certificate in 2000.

For the success in the furious competition in the market and meeting customers' demand, the company adheres to the market orientation and focuses on the customer. It has been highly praised by the customer with its quick response, excellent services and well-qualified products.

Our company solemnly declares to all customers:

Transformer less than 35kV and box-type product lifetime are no less than 30 years.

On receiving the bidding documents, we will evaluate the product according to the technical specification. After signing contract, technicians will be organized to analyze the technical specification in time and all the requirements will be brought into effect one by one.

We will select qualified subcontractor of components, and we will strictly carry out the quality control and inspection for raw material and components according to requirements of quality system.

Based on the principle of being responsible for customer, we require all the subcontractors of components to produce well-qualified products according to end-user's contract and technical specification.

For the fittings selected by clients, we will provide all corresponding technical conditions and documents in agreement with customer's requirement.

Transformer less than 35kV and box-type product's performance indexes and technical parameters will completely meet and be superior to national standards.

If there have oil leakage problems because of manufacturing of less than 35kV transformer and box-type products installed within three years after the operation. All key parts with quality defects occurred during manufacturing and inconsistent with contract or technical specification will be repaired or replaced unconditionally. We will firstly solve all the quality problems taken place during installation to meet the requirement of project schedule, and then we will analyze the responsibilities.

The customer is welcomed to witness the manufacture and test of transformer less than 35kV and box-type products during manufacture and we shall provide all convenience.

We will provide best after-sale services and guide installation and debugging of the transformer freely. Receiving client's requirements, our serving staffs will arrive at the site within the shortest time(within 300 kilometers, 24 hours; outside 300 kilometers, 72 hours).

We has established mature periodic return visit system. We will send the writing questionnaire or visit the site at regular intervals.

Service Hotline:

Telephone: 0086-538-8639656

Contact person: Zhai Baorong

Fax: 0086-538-8639656

Cell-phone number: 13615380311

订货须知

>> Ordering Information

请您在百忙中填写如下, 以使我们能尽快对您的要求做出反应。

变压器型号: _____

额定容量: _____ kVA

额定容量比: ____%/____%/____%

相数: ☐三相 ☐单相

频率: ☐50Hz ☐60Hz

高压额定电压:

☐35kV/☐38.5kV/☐其它kV

高压分接范围:

☐ $\pm 2 \times 2.5\%$ ☐ $\pm 3 \times 2.5\%$

☐ $\pm 5\%$ ☐其它

中压额定电压: _____ kV

低压额定电压:

☐0.4kV ☐3.15kV ☐6.3kV ☐6.6kV

☐10.5kV ☐11kV ☐其它

联接组标号: ☐Yyn0 ☐Dyn11 ☐Yd11

☐YNd11 ☐其它

[说明: 大写字母代表高电压联接类型, 小写字母代表低电压联接类型]

短路阻抗: ☐4% ☐4.5% ☐6.5% ☐7%

☐7.5% ☐8% ☐其它

冷却方式: ☐油浸自冷 ☐油浸风冷 ☐其它____

空载损耗: _____ kW

负载损耗: _____ kW

空载电流: _____ %

绝缘等级: A级

绝缘水平: L1____AC____-L1____AC____/L1____AC____

噪音水平: _____ db(A)

滚 轮: ☐有 ☐无

套管泄漏比距:

高压套管泄漏比距 $\geq$ () cm/kV

低压套管泄漏比距 $\geq$ () cm/kV

讯号温度计要求:

☐BWY-802A

☐BWY-803A

☐BWY-802A/YE

☐BWY-803A/22B

☐WTZK-02 ☐其它

分接开关: ☐有载分接开关

☐无载分接开关

若为有载分接开关, 请注意信号电缆长度容量在8000kVA以上时, 请填写以下绕组温度控制器:

☐有 ☐没有

控制装置: ☐风冷控制柜(整体)

☐风冷控制箱(分体式)

☐端子箱(分体式)

梯子: ☐有 ☐无

储油柜:

☐胶囊式储油柜、磁针式油位计

☐胶囊式储油柜、玻璃管油位计

☐外油波纹管式储油柜、拉带式油位计

☐内油波纹管式储油柜、视窗式油位计

当产品运行海拔大于1000m时, 请提供以下数据

海拔高度: _____ m

Ordering Information

>> 订货须知

Please fill in the below data sheet so that we can know your requirements and serve you better.

Transformer Type: _____

Rated Capacity _____ kVA

Rated Capacity Ratio: ____%/____%/____%

No. of Phase:☐Three Phase ☐Single Phase

Frequency: ☐50Hz ☐60Hz

HV Rated Voltage: _____

☐35kV/☐38.5kV/☐OtherskV

HV Tap Range: _____

☐±2×2.5% ☐±3×2.5%

☐±5% ☐Others

MV Rated Voltage: : _____ kV

LV Rated Voltage: _____

☐0.4kV ☐3.15kV ☐6.3kV ☐6.6kV

☐10.5kV ☐11kV ☐Others

Vector Group:☐Yyn0 ☐Dyn11 ☐Yd11

☐YNd11 ☐Others

(NOTE: Capital letters represent the type of HV connection,

lowercase letters represent the type of LV connection)

Short circuit impedance: _____

☐4% ☐4.5% ☐6.5% ☐7%

☐7.5% ☐8% ☐Others

Type of cooling: ☐ONAN ☐ONAF ☐Others _____

No-load loss: _____ kW

On-load loss _____ kW

No-load current: _____ %

Insulation class: A级

Insulation level: L1____AC____-L1____AC____/L1____AC____

Noise level: _____db(A)

Wheel: ☐Yes ☐No

Bushing Creepage Distance: _____

HV Bushing Creepage Distance≥ () cm/kV

LV Bushing Creepage Distance≥ () cm/kV

Signal Thermometer Requirement: _____

☐BWY-802A ☐BWY-803A

☐BWY-802A/YE ☐BWY-803A/22B

☐WTZK-02 ☐Others

Tap Changer: ☐OLTC ☐NLTC

Under OLTC, when the load cable length is

above 8000kVA, please fill in the following winding

temperature controller:☐Yes ☐No

Control device: _____

☐Air-cooled control cabinet (integral)

☐Air-cooled control box (split type)

☐Terminal box (split type)

Ladder: ☐Yes ☐No

Conservator: _____

☐capsule type oil conservator, magnetic needle oil level gauge

☐capsule type oil conservator, glass tube oil level gauge

☐outside the oil bellows storage tank, pull the oil level meter

☐oil ripple tube storage tank, window oil level gauge

When the product operation at altitudes more

than 1000m, please provide the following data.

Altitude: _____m