



**QCEE - QINGDAO CAHORS ELECTRICAL
EQUIPMENT CO., LTD**
Medium Voltage Division

青岛卡奥电力设备有限公司

CONNECTING ENERGY AND PEOPLE





连接人类与能源

能源的历史就是人类的历史

卡奥集团的历史可以追溯至 1910 年, 那是网络开始出现的时代。

这是卡奥集团悠久历史的开端, 从法国南部卡奥市的一家小工厂发展成为一家跨越四大洲在全世界拥有17家子公司的跨国企业。

连接·联系

在 100 多年的时间里, 这一直是卡奥集团发展的驱动力。全世界的卡奥人一起努力, 让能源的运输和信息的获取更加便捷。

卡奥人结合智慧与技能的力量, 提供专业和创新解决方案将个人及公司与所需的资源, 例如电、信息、水和气连接起来。

创新是卡奥战略的中流砥柱。

创新为电、水、气配送网络和全球通讯网络特殊要求提供适用的综合性解决方案和设备。

CONNECTING ENERGY AND PEOPLE

The history of energy is the history of humanity

The origins of Groupe Cahors go back to 1910, a time when networks were beginning to appear.

This is the beginning of a long history that led Groupe Cahors (a small factory in 1910, located in Cahors, South of France) to become a multinational corporation with 12 subsidiaries worldwide, based on 4 continents.

Connecting. Linking

For over 100 years, that has been the driving force of Groupe Cahors. Together, the men and women of Cahors over the world, work to help transport

energies and facilitate access to information.

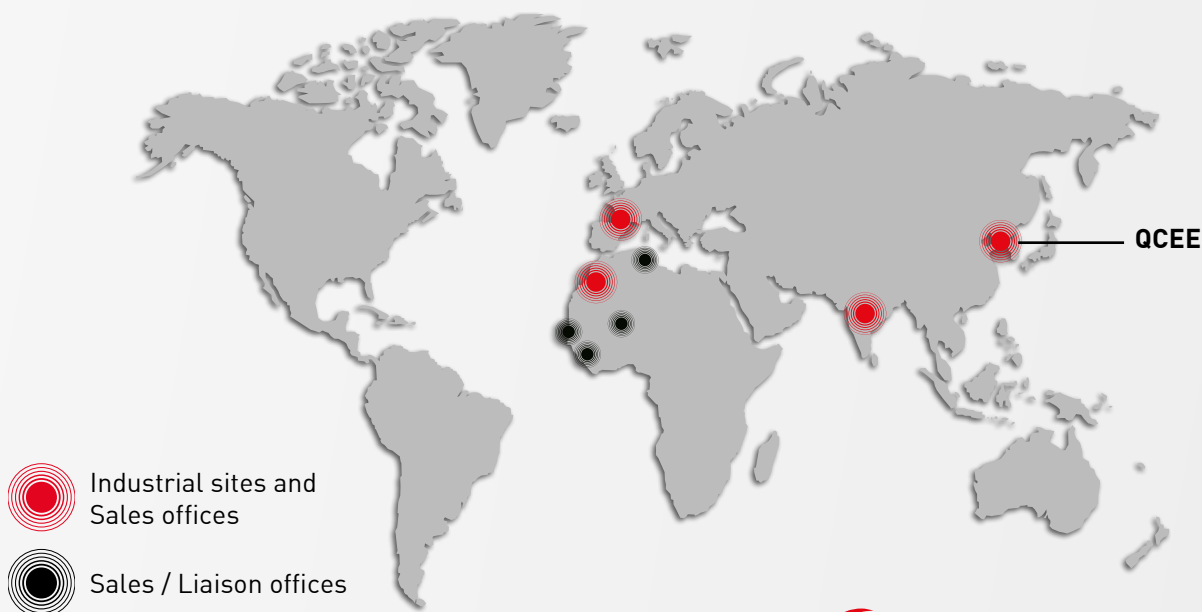
They combine their skills and contribute technical and innovative solutions that enable us to connect individuals and companies to the resources they need, such as electricity, information, water and gas.

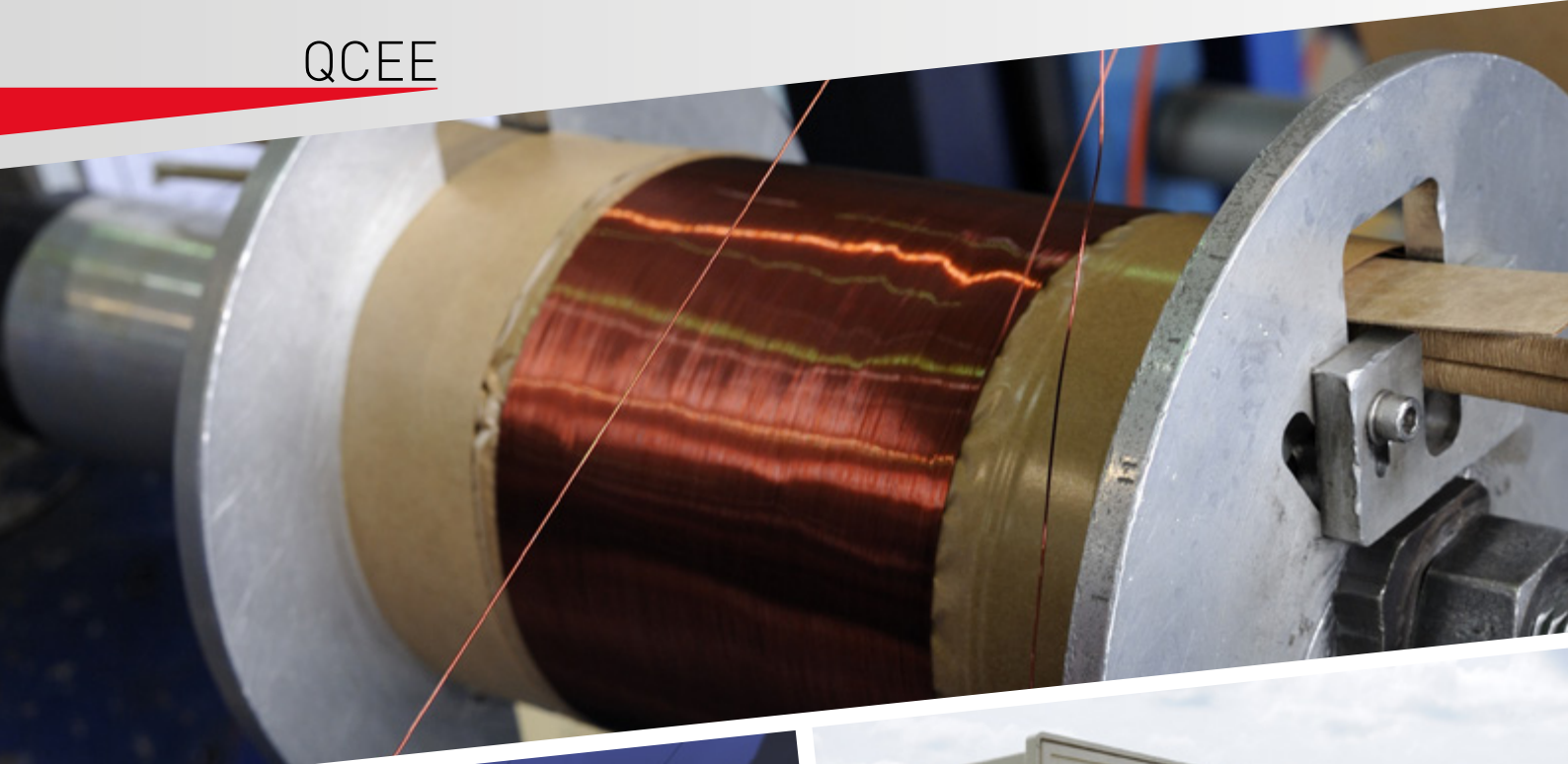
Innovation is the mainstay of CAHORS' strategy

It offers comprehensive solutions and equipment suited to the specificities of electricity, water and gas distribution networks and communication networks all around the world.

GROUPE CAHORS HAS 12 SUBSIDIARY COMPANIES WORLDWIDE

卡奥集团在全世界拥有12家子公司





适合能源和通讯网络的综合性解决方案

卡奥提供适应中低压配电网络特殊要求的综合性解决方案、设备和服务：箱式变电站、中压连接开关、低压配电盘、高科技电子产品和远程网络监控设备。

卡奥同时研发出适应各种需求的低压解决方案：连接、计量、分配以及保护，其产品适用于各种领域的要求：地下工程连接、街道照明，厨卫，楼层配电线路板和充电站。

卡奥提供通讯设备的创新产品包括：卫星电视信号输送、光纤方案、铜接头、数码产品。从运营商到用户，这些产品可以满足市场的全部需求。

在五大洲研发饮用水输送网络也是卡奥的优先项目。

其设计的饮用水输送计量工作单元、地下组合模块以及全面综合的连接解决方案，将效率与环境保护有机地结合在一起。卡奥也致力于在城市和乡村区域的气体输送，其配套产品包括计量工作单元以及地下连接模块。

流体仪表具备专业电子 LED 远程读数功能。

COMPREHENSIVE SOLUTIONS DEDICATED TO ENERGY AND COMMUNICATION NETWORKS

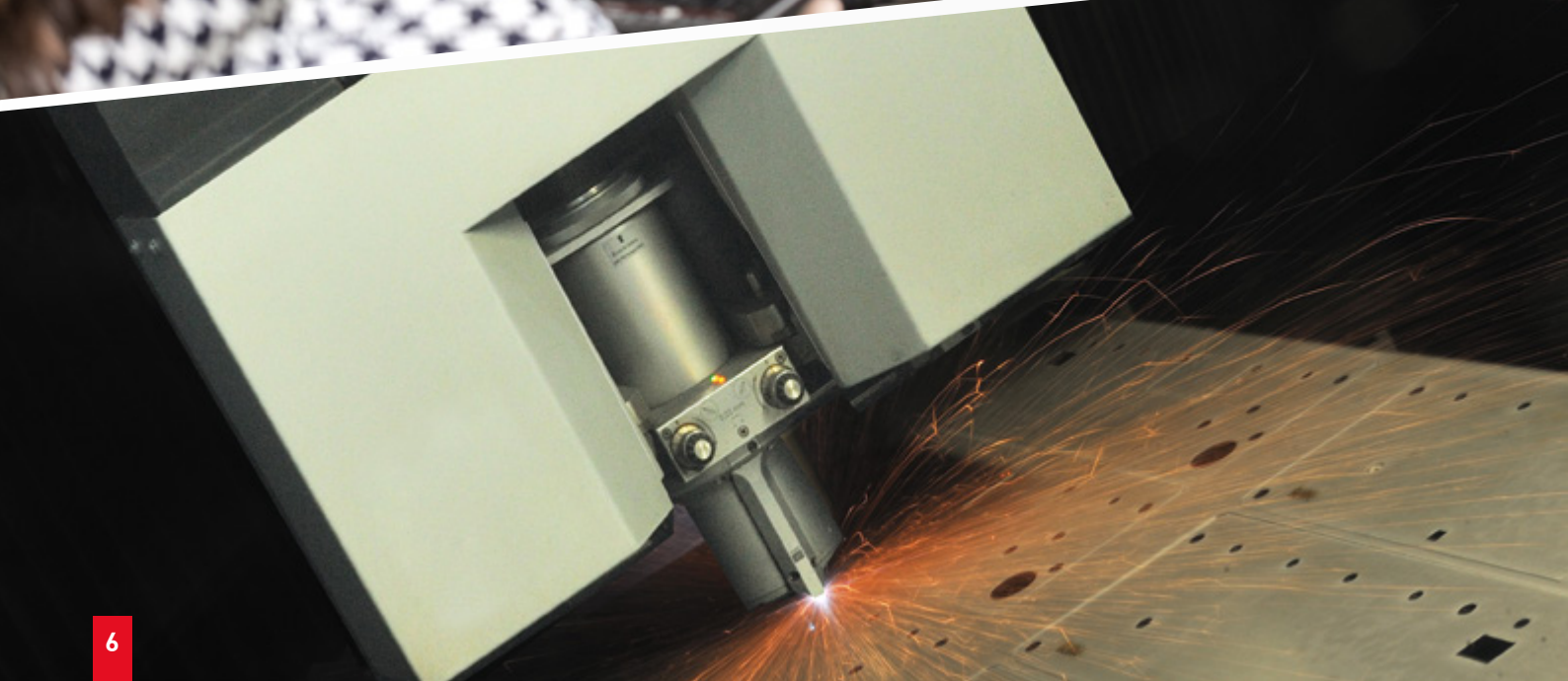
CAHORS offers global solutions, equipment and services suited to the specificities of Medium Voltage electricity distribution networks : substations combining transformers, MV switchgear, LV boards, high-tech electronics and even remote network monitoring.

It also develops a range of Low Voltage solutions tailored to all needs : connection, metering, distribution and protection with products that can be adapted to the requirements of any type of location : underground connections, street lighting units, cabinets, floor distribution panels and electric charging stations.

CAHORS proposes innovative products for communication equipment including :

Television distribution, Fibre optic solutions, copper connectors, Voice-Data-Images products. They meet all the needs of the market, from the operator to the subscriber.

Develop drinking water distribution networks on all five continents is also a priority for **CAHORS**. Its units, underground modules and comprehensive connecting solutions combine efficiency and environmental integration. **CAHORS** also works in gas distribution, in urban and rural areas : units and under-pavement modules. Expertise in electronics has led to remote readings of fluid meters.



卡奥在中国 (青岛卡奥电力设备有限公司)

青岛卡奥电力设备有限公司 (Qingdao Cahors Electrical Equipment Co., Ltd) 是法国卡奥集团在中国的全资子公司, 于 2004 年成立, 2006 年正式投产, 坐落于美丽的海滨城市——青岛。

在母公司法国卡奥集团的技术支持下, 青岛卡奥电力设备产中低压 10KV~36KV 油浸式配电变压器, 平均每年出口变压器 5000 多台, 产品被广泛应用在欧洲、非洲和法国电网。

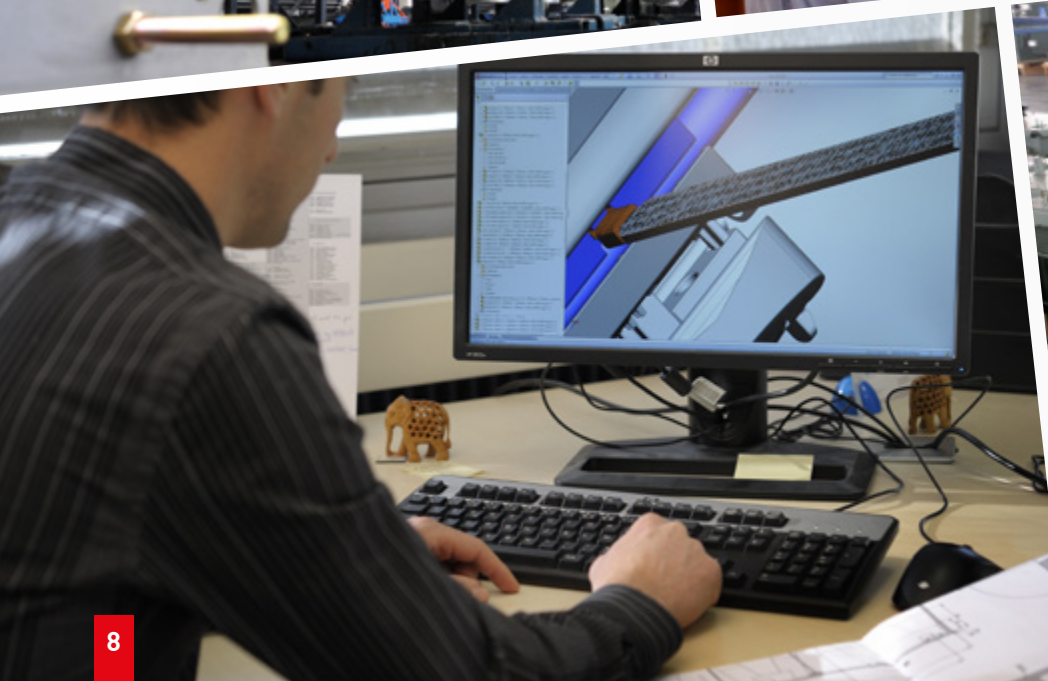
我们的主要客户有法国电力公司(Enedis)、喀麦隆国家电力公司 (AES SONEI)、施耐德电气 (Schneider Electric)、布基纳法索国家电力公司 (the National Electricity Company of Burkina Faso) 等。

CAHORS PLANT IN CHINA (QINGDAO CAHORS ELECTRICAL EQUIPMENT CO., LTD)

Established in 2004, Qingdao Cahors Electrical Equipment Co., Ltd (QCEE) was officially put into production in 2006. Located at Qingdao, a beautiful coastal city in China, QCEE is a subsidiary of Groupe CAHORS.

Under the technical support of its parent firm Groupe CAHORS, QCEE produces medium and low voltage oil-immersed transformers of 10 kV to 36 kV and exports averagely over 5,000 transformers every year which are widely used in power grid in France, Africa and Europe.

Our main clients are Électricité de France S.A. (Enedis), AES SONEI, Schneider Electric and the National Electricity Company of Burkina Faso etc.



青岛卡奥电力设备主要资质：

- 1 公司于 2007 年 6 月被喀麦隆国家电力部认证为合格供应商；
- 2 公司于 2008 年 10 月被刚果国家电力部认证为合格供应商；
- 3 2008 年 5 月通过中国质量认证中心 ISO 9001 : 2000 版质量体系认证；2011 年 4 月通过中国质量认证中心 ISO 9001: 2008 版质量体系认证；
- 4 公司于 2008 年 12 月被法国国家电力部认证为合格供应商，也是全亚洲唯一通过法国电力公

司认证的配电变压器供应商；

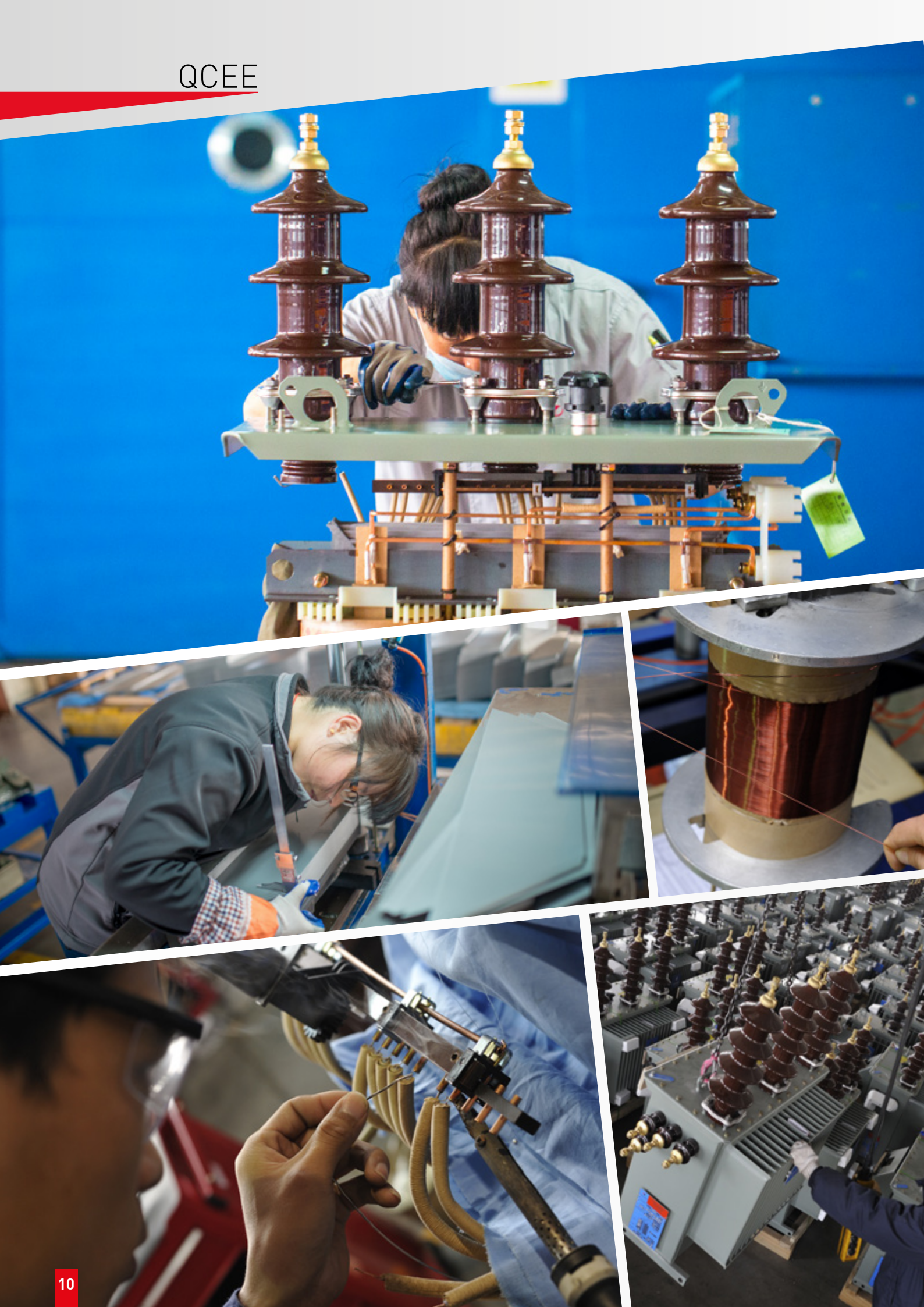
- 5 公司于 2010 年 3 月被青岛经济开发区管理委员会授予 2009 年突出贡献企业；
- 6 公司于 2013 年 8 月被布基纳法索国家电力部认证为合格供应商。

ENTERPRISE QUALIFICATIONS

Main qualifications of QCEE:

- 1 June 2007, Certified supplier of Cameroon Ministry of Electric Power;
- 2 October 2008, Certified supplier of Congo Ministry of Electric Power;
- 3 In May 2008, QCEE gets ISO 9001:2000 quality system certification issued by China Quality Certification Centre; in April 2011, QCEE gets ISO 9001:2008 quality system certification issued by China Quality Certification Centre;
- 4 December 2008, Certified supplier of Enedis. It is the only certified distribution transformer supplier of Enedis in Asia;
- 5 In March 2010, QCEE is rewarded by the Management Committee of Qingdao Economic and Technological Development Zone as "2009 Outstanding Contribution Enterprise".
- 6 August 2013, Certified supplier of Burkina Faso Ministry of Electric Power.





企业产能及产品优势

产能

青岛卡奥电力设备的主导产品为10kV~36kV电压等级的油浸式变压器。生产能力9000台/年。经过优化的变压器尺寸能够更好的适应箱式变电站的要求。

技术优势

1 抗短路能力

先进的设计和制造工艺保证产品100%通过抗短路试验。

2 全真空注油

变压器在运行过程当中, 器身内的微小气泡会导致放电分解出乙炔气体, 并使绝缘油劣化。全真空注油技术可以保证整个注油过程在真空状态下进行, 将器身内的空气完全排出, 从而避免了上述问题的产生, 延长变压器的使用寿命。

3 变压器油箱

- 1、油箱制造过程中100%采用荧光试漏法, 保证无漏点
- 2、超强防腐性能: 根据客户需求, 表面处理可以满足盐雾试验1000小时不生锈 (试验标准GB / T1771-2007)

**先进/现代化的生产工艺和组装线
保证准时交货**

PRODUCTIVITY & PRODUCT ADVANTAGES

Productivity

QCEE's main products are 10kV~36kV oil-immersed transformers. Its annual productivity is 9,000 units. The size of the transformers has been optimized for better integration in substations.

Technical Advantages

1 Good short circuit withstand performance

Advanced design and manufacturing process guarantee 100% passing of short circuit withstand test.

2 Full vacuum greasing

During the operation of transformer, any micro-bubble in transformer will lead to partial discharge and decomposition of acetylene gas, which degrades dielectric oil. The full vacuum greasing technique can guarantee the vacuum status of the whole greasing process and eliminate all air out of the transformer to avoid the aforesaid problem and extend the service life of transformer.

3 Transformer tank

1. 100% fluorescent Leakage test approach is used in the transformer tank manufacturing process to guarantee no leakage point.
2. Upon customer request, QCEE can offer the corrosion resistant surface treatment (up to 1000 h) according to the standard GB/ T1771-2007.

**Advance / modern assembly line
and process**

On time delivery

产品概览 PRODUCT OVERVIEW

变压器国标系列产品

TRANSFORMERS STANDARD PRODUCTS

S11 型 10kV 无励磁调压油浸式配电变压器

S11 Type 10kV oil-immersed non-excitation regulating and distributing transformer



容量 Contents (kVA)	高压 High Voltage (kV)	分接范围 High Voltage Tap Range (%)	低压 Low Voltage (V)	损耗 Loss (W)		声功率级 SPL (dBA)	空载电流 No-Load current (A)	短路阻抗 Short-circuit Impedance (%)
				空载 No load	负载 Load			
50	10	±2x2.5%	400	130	910 / 870	50	2.0	4%
100				200	1580 / 1500	52	1.8	
160				280	2310 / 2200	54	1.6	
200				340	2730 / 2600	56	1.5	
250				400	3200 / 3050	56	1.4	
315				480	3830 / 3650	58	1.4	
400				570	4520 / 4300	58	1.3	
500				680	5410 / 5150	60	1.2	
630				810	6200	60	1.1	4.50%
800				980	7500	62	1.0	
1000				1150	10300	62	1.0	
1250				1360	12000	65	0.9	
1600				1640	14500	65	0.8	

注：上表中斜杠上方的数据适用联结组Dyn11，斜杠下方的数据适用联结组Yyn0。

Notes : The data above the slash in the above sheet is for link group Dyn11, and the data below the slash is for Yyn0.

如需产品尺寸等详细信息请与我们联系

Please contact us for further information about dimensions

产品概览 PRODUCT OVERVIEW

变压器国标系列产品

TRANSFORMERS STANDARD PRODUCTS

S13 型 10kV 无励磁调压油浸式配电变压器

S13 Type 10kV oil-immersed non-excitation regulating and distributing transformer



容量 Contents (kVA)	高压 High Voltage (kV)	分接范围 High Voltage Tap Range (%)	低压 Low Voltage (V)	损耗 Loss (W)		声功率级 SPL (dBA)	空载电流 No-Load current (A)	短路阻抗 Short-circuit Impedance (%)
				空载 No load	负载 Load			
50	10	±2x2.5%	400	100	910 / 870	50	2.0	4%
100				150	1580 / 1500	52	1.8	
160				200	2310 / 2200	54	1.6	
200				240	2730 / 2600	56	1.5	
250				290	3200 / 3050	56	1.4	
315				340	3830 / 3650	58	1.4	
400				410	4520 / 4300	58	1.3	
500				480	5410 / 5150	60	1.2	
630				570	6200	60	1.1	4.50%
800				700	7500	62	1.0	
1000				830	10300	62	1.0	
1250				970	12000	65	0.9	
1600				1170	14500	65	0.8	

注：上表中斜杠上方的数据适用联结组Dyn11，斜杠下方的数据适用联结组Yyn0。

Notes : The data above the slash in the above sheet is for link group Dyn11, and the data below the slash is for Yyn0.

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产品概览 PRODUCT OVERVIEW

变压器IEC系列产品
TRANSFORMERS STANDARD PRODUCTS

绝缘等级为 **24kV** 的 **IEC** 产品
IEC products with insulation class of 24kV



容量 Contents (kVA)	高压 High Voltage (kV)	分接范围 High Voltage Tap Range (%)	低压 Low Voltage (V)	损耗 Loss (W)		声功率级 SPL (dBA)	短路阻抗 Short-circuit Impedance (%)	尺寸 Dimensions		
				空载 No load	负载 Load			长 L (mm)	宽 W (mm)	高 H (mm)
挂杆式变压器 Pole mounted transformers										
50	15 20	±5% ±2x2.5%	410	Provide products in line with IEC in accordance with client requirements		4%		850	610	1045
100								885	710	1135
160								1190	735	1135
地上式变压器 Ground mounted transformers										
250	15 20	±5% ±2x2.5%	410	根据客户需求提供符合IEC标准的产品 Provide products in line with IEC in accordance with client requirements		4%		992	820	1225
315								1135	785	1140
400								1420	860	1360
500								1500	960	1205
630								1490	965	1455
1000						6%		1700	1015	1545
1250								2035	1025	1770
1600								1870	1160	1850
2000								2140	1420	1950

- 注：
- 1 可以根据运行环境提供符合IEC标准的不同温升要求的产品
 - 2 可以根据用户的连接方式不同提供不同材质的高低电压套管：瓷套管，插入式套管，环氧树脂套管，连接铜排，等...
- Notes :
- 1. IEC qualified products that can meet different temperature rise requirements can be provided.
 - 2. High and low voltage bushing pipes of different materials can be provided as per the connection method of the client : porcelain bushing, plug-in bushing, epoxy resin bushing and copper busbar etc.

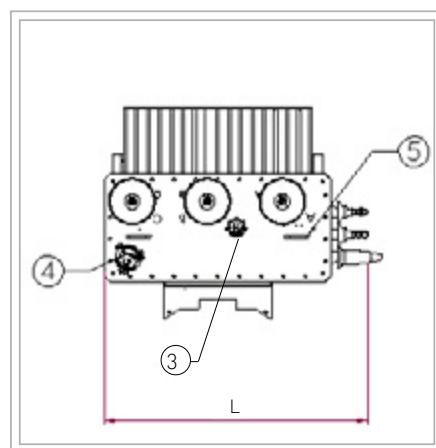
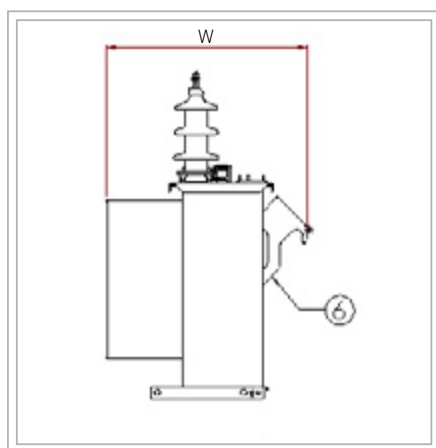
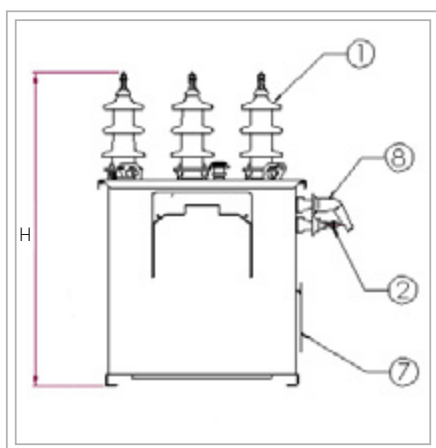


产品概览 PRODUCT OVERVIEW

变压器国标系列产品

TRANSFORMERS STANDARD PRODUCTS

挂杆式变压器 Pole mounted transformers



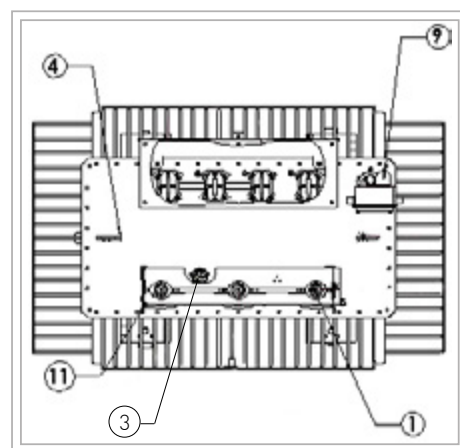
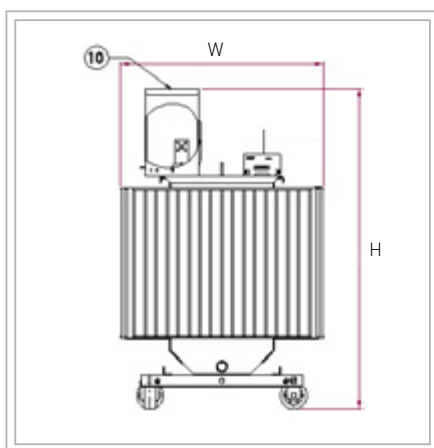
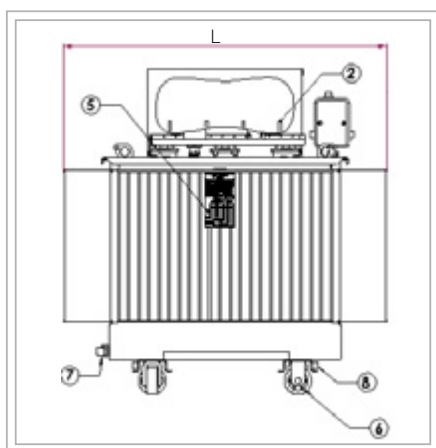
- ① HV bushings: DT 20 NF 250 (DIN 42 531)
高压绝缘子: DT 20 NF 250 (DIN 42 531)
- ② LV bushings: TMT 1kV 250A (NFC 52 052)
低压绝缘子: TMT 1kV 250A (NFC 52 052)

- ③ Off-load tap changer
分接开关
- ④ Filling device
注油法兰

- ⑤ Lifting lugs
提升吊环
- ⑥ Hanging system (NF C 52 192-3)
悬挂系统 (NF C 52 192-3)

- ⑦ Rated plate
产品铭牌
- ⑧ LV insulating sleeves (optional)
低压绝缘套 (可选项)

地上式变压器 Ground mounted transformers



- ① HV bushings: PF 250A (DIN 52-S-61)
高压绝缘子: PF 250A (DIN 52-S-61)
- ② LV bushings: 1250A (HN 52-S-62)
低压绝缘子: 连接排 1250A (HN 52-S-62)
- ③ Off-load tap changer
分接开关

- ④ Lifting lugs
提升吊环
- ⑤ Rated plate
产品铭牌
- ⑥ Bi-directional rollers Ø125x40
导向轮 Ø125x40

- ⑦ Outlet valve A 22 (DIN 42 551)
排油阀 A 22 (DIN 42 551)
- ⑧ M12 Earthing studs (DIN 48 088)
接地端子 M12 (DIN 48 088)
- ⑨ Protection relay (optional)
保护继电器 (可选)

- ⑩ Low voltage cover IP31 (optional)
低压保护罩 IP31 (可选)
- ⑪ MV Locking device (optional)
高压锁紧装置 (可选)

产品概览 PRODUCT OVERVIEW

变压器IEC系列产品
TRANSFORMERS STANDARD PRODUCTS

绝缘等级为 **36kV** 的 **IEC** 产品
IEC products with insulation class of 36 kV



容量 Contents (kVA)	高压 High Voltage (kV)	分接范围 High Voltage Tap Range (%)	低压 Low Voltage (V)	损耗 Loss (W)		声功率级 SPL (dBA)	短路阻抗 Short-circuit Impedance (%)	尺寸 Dimensions		
				空载 No load	负载 Load			长 L (mm)	宽 W (mm)	高 H (mm)
挂杆式变压器 Pole mounted transformers										
50	33 30	±5% ±2x2.5%	410 400	Provide products in line with IEC in accordance with client requirements			4% 4.5%	970	660	1170
100								1165	725	1270
160								1255	775	1320
地上式变压器 Ground mounted transformers										
250	33 30	±5% ±2x2.5%	410 400	根据客户需求提供符合IEC标准的产品			4% 4.5%	1030	810	1175
315								1400	950	1180
400								1430	960	1180
500								1460	935	1200
630								1520	1000	1200
800				Provide products in line with IEC in accordance with client requirements			6%	1630	1080	1310
1000								1695	1060	1440
1250								2025	1420	1825
1600								1910	1390	1860

- 注：
- 1 可以根据运行环境提供符合IEC标准的不同温升要求的产品
 - 2 可以根据用户的连接方式不同提供不同材质的高低压套管：瓷套管，插入式套管，环氧树脂套管，连接铜排，等...
- Notes :
- 1. IEC qualified products that can meet different temperature rise requirements can be provided.
 - 2. High and low voltage bushing pipes of different materials can be provided as per the connection method of the client : porcelain bushing, plug-in bushing, epoxy resin bushing and copper busbar etc.

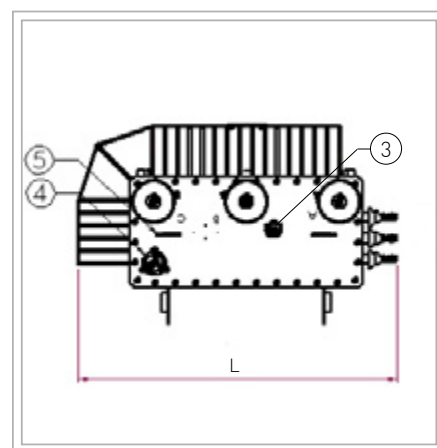
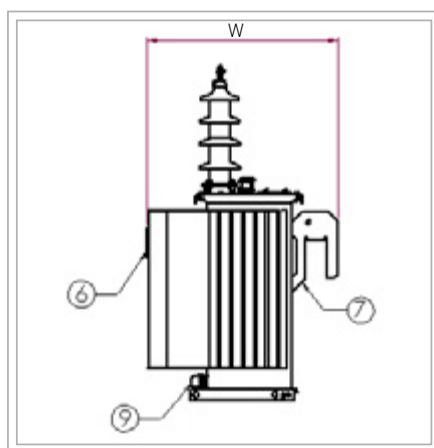
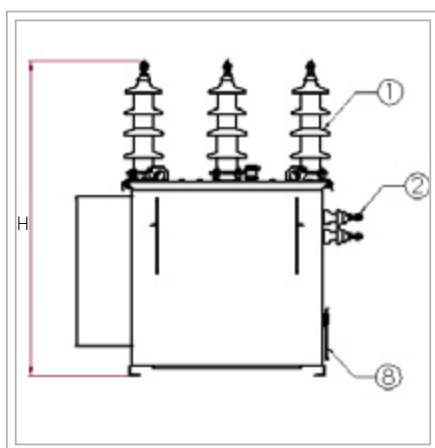


产品概览 PRODUCT OVERVIEW

变压器国标系列产品

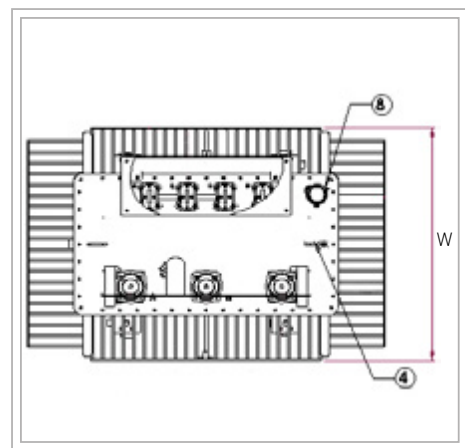
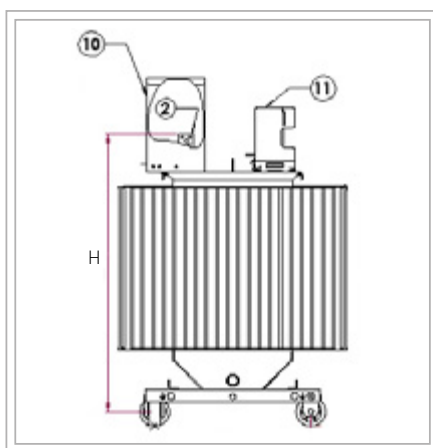
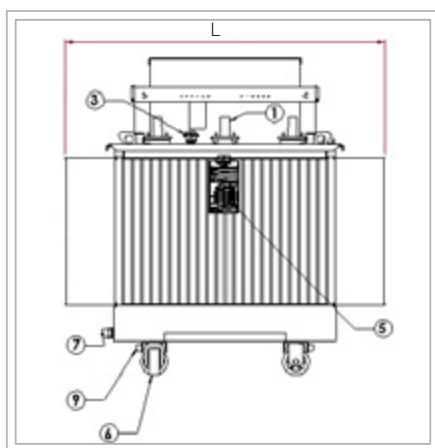
TRANSFORMERS STANDARD PRODUCTS

挂杆式变压器 Pole mounted transformers



- | | | | | |
|--|--------------------------------|------------------------|--------------------------|--|
| ① HV bushings : DT 30 NF 250 (DIN 42-531)
高压绝缘子 : DT 30 NF 250 (DIN 42-531) | ③ Off-load tap changer
分接开关 | ⑤ Lifting lugs
提升吊环 | ⑦ Hanging system
悬挂系统 | ⑨ Outlet valve A22
(DIN 42-551)
排油阀A22
(DIN 42-551) |
| ② LV bushings : TMT 1kV 250A (NFC 52 052)
低压绝缘子 : TMT 1kV 250A (NFC 52 052) | ④ Filling device
注油法兰 | ⑥ Name plate
公司标识标牌 | ⑧ Rated plate
产品铭牌 | |

地上式变压器 Ground mounted transformers



- | | | | |
|--|---|--|---|
| ① HV bushings : PF 250A/400A (DIN 52-S-61)
高压绝缘子 : PF 250A/400A (DIN 52-S-61) | ④ Lifting lugs
提升吊环 | ⑦ Outlet valve C2 Dn 22 (EN 50216-4)
排油阀C2 Dn 22 (EN 50216-4) | ⑩ Low voltage cover IP31 (optional)
低压保护罩 IP31 (可选) |
| ② LV bushings : 1250A (HN 52-S-62)
低压绝缘子 : 1250A (HN 52-S-62) | ⑤ Rated plate
产品铭牌 | ⑧ Filling device
注油法兰 | ⑪ MV Locking device for CSE (optional)
CSE 高压锁紧装置 (可选) |
| ③ Off-load tap changer
分接开关 | ⑥ Bi-directional rollers Ø125x40
导向轮 Ø125x40 | ⑨ B1 M12 Earthing studs (EN 50216-4)
接地端子 B1 M12 (EN 50216-4) | |

产品概览 PRODUCT OVERVIEW

根据企业和生产商的需要,卡奥可以提供完整的变压器产品系列。

有载调压变压器

应对对效率和可靠性有严苛要求的情况, 卡奥提供有载调压变压器:

- 从 10 kV 到 35 kV
- 二次额定电压 : 从 400 到 433 V
- 根据具体要求制定适合的解决方案

CAHORS proposes a full range of transformers which fit perfectly to customers and manufactures' needs.

ON LOAD TAP CHANGER TYPE

For the most demanding application when efficiency and reliability are critical, CAHORS provides transformers with on-load tap changer :

- From 10 kV to 35 kV
- Rated secondary voltages : from 400 to 433 V
- Specific developments are available on request



产品概览 PRODUCT OVERVIEW

插入式环氧绝缘子变压器

插入式连接可以优化变压器体积, 以便更好的适应预装式箱变。

- 体积减小
- 用户安全: 防护等级为IP2X

是重污染区域的理想解决方案。

环保变压器

卡奥提供:

- 以可降解的植物油代替矿物油的变压器, 具备优秀的介电性能。此类变压器可满足对地下水层及环境敏感和受保护区域的保护要求。
- 以硅油作为绝缘油的变压器具有良好的防火性能, 可用于公共场所、高层建筑和风险较大的工业区等。

PLUG-IN EPOXY BUSHING TYPES

The plug-in connections enable an optimal integration of CAHORS transformers in the prefabricated electric substations.

- Minimum dimensions
- Operators' security : IP2X as degree of protection

Ideal solution for heavily polluted areas.



ECO-TRANSFORMERS

CAHORS proposes :



- Transformers with vegetable oil, local and biodegradable alternative to mineral hydrocarbon oil, providing excellent dielectric characteristics. They meet the protection requirements of groundwater and environmentally sensitive and protected sites.

- Transformers with silicone insulation oil intended for an installation in public places, high-rise buildings and at risk industrial sites... (protection against the spread of fire.)



质量管理体系

1 严格的原材料质量控制

所有变压器的主要零部件和原材料的所有变压器的主要零部件和原材料的供应商都经过了法国卡奥集团的认证，并对主要供应商进行有计划的质量监督，保证零部件及原材料质量。

2 原材料使用承诺：

- 产品100%使用全新材料（无回收材料）进行制造；
- 变压器油绝不含有多氯联苯（PCBs）的成分。

卡奥集团秉承可持续发展理念，承诺生产对人员和环境安全可靠的可回收变压器产品。

3 严谨的生产控制管理

- 1、 变压器100%经过两次疲劳渗漏试验，人为模拟油箱疲劳状态，配合使用航天级显影剂检漏，保证变压器无漏点。
- 2、生产的每个环节都被很好的控制和记录，以保证产品的可追溯性。

4 先进的自动化检验设备

配备欧洲设计的全套自动化试验设备，并定期对试验平台进行校准，产品100%通过例行试验，保证所有出厂产品合格。

QUALITY MANAGEMENT SYSTEM

1 Strict raw material quality control :

All the suppliers of main parts and raw materials of transformer are certified by Groupe Cahors in France, which carries out a planned quality surveillance to main suppliers to guarantee the quality of components and raw materials.

Involved in sustainable development, Cahors commits to manufacture non dangerous and recyclable transformers which are safe for person and for environment.

2 Raw material usage commitment :

- The products are manufactured by 100% new materials (no recycled materials);
- The transformer oil includes no PCBs.



QUALITY MANAGEMENT SYSTEM

3 Strict production control and management

1. All transformers will undergo twice endurance leakage tests. Simulate oil tank fatigue status and use aerospace-grade developing agent to detect leakage to guaranty no leakage point of transformers.
2. Each step in the process of manufacturing is controlled and recorded in order to ensure the traceability of the products.

4 Advanced automatic testing equipment

QCEE is equipped with full set of automatic testing equipment designed in Europe and carries out calibration to the test platform in a regular way; all products undergo routine test to guarantee the qualification of all outgoing products.



超长使用寿命

全真空注油、全密封技术工艺和严格的过程控制造就了变压器的超长使用寿命, 正常运行情况下可达30年。

LONG SERVICE LIFE

Full vacuum oil filling, full-sealing technique and strict manufacturing process control realize the long service life of the transformer and it usually can be used 30 years.

产品定制

青岛卡奥电力设备沿袭了法国卡奥集团百年的生产以及管理经验, 而且拥有专业的技术研发团队, 每年将销售额的6%投入到产品研发和创新设计上。不仅能提供标准化产品, 而且可以量身定制配电解决方案, 从多种角度与层面满足了客户的需求。

TAILORED PRODUCTS

Inherited with the century production and management experiences of Groupe Cahors, QCEE has professional R&D team and invest 6% of the sales volume into production research and innovation design. QCEE can not only provide standard products, but also tailor power distribution solution and satisfy the client demand from several aspects and levels.







 www.groupe-cahors.com

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