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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 30841-2014

**General requirements for high-voltage shunt capacitor
installations**

高压并联电容器装置的通用技术要求

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. The standard proposed by China Electrical Equipment Industrial Association. This standard by the National Standardization Technical Committee on Power capacitor (SAC/TC45) centralized. This standard is drafted by: Wuxi SUN.KING Capacitor Co., Ltd., Xi'an High Voltage Apparatus Research Institute Co., Ltd. Participated in the drafting of this standard. Hefei Warwick Automation Co., Ltd., Zhejiang Electric Power Company Electric Power Research Institute, Wujiang Jervois electricity Gas Ltd., Guilin Power Capacitor Co., Ltd., Guangdong Power Research Institute, ABB Xi'an Power Capacitor Co. The company, Xi'an Electric Power Capacitor Co., Ltd., Shanghai Siyuan Electric Power Capacitor Co., Ltd., Shaoxing, Zhejiang electric power, electric power Shangyu Container Co., Ltd., Qingdao Buffett Electrical Technology Co., Ltd., Qingdao Hengshun Electric Co., Ltd., Anhui Electric Power Research Institute, Shenzhen And Shenzhen City Power Technology Co., Ltd., Nissin Electric (Wuxi) Co., Ltd., Shenzhen City & Poor's Shun Technology Co., Cooper Shanghai Power Capacitor Co., Ltd, Shanghai Electric Group Co., Ltd. Yong-Jin, referring to month Group Co., Anshan City, Hengli Electrical Equipment Manufacturing Co., Ltd., Zibo Leybold Power Capacitor Co., Ltd. The main drafters of this standard. Yang Yimin, Yang Changxing,

Jiang Jun Xiang Liang Cong, Zhao Qicheng, Xu Linfeng, GUO Qing-wen, Liu Jing, Donghai Jian, HE tide, Chong Hu, Cai heavy Kai, Chen Baifu, maritime history, Zhang Jianping, Chen Xiaoyu, Lin Yue Wang, Tao Mei, Liu Dai Hung, steel Qi, Zhang has, Yanhuan Ling, Lu Tao, Lu Jian, Su Bin, Zhang Jian call, small Shen Yi, Zhao Fuqing, Wangpei Bo, Wang Ming cents, Zhu Wenqing, Yu Yang, Ma peak. General technical requirements for high-voltage shunt capacitor means

1 Scope

China's national general technical requirements for high voltage shunt capacitor installations. It specifies the performance, the tests and the safety requirements for shunt capacitor installations in AC power systems of nominal voltage above 1000 V, and gives guidance on their installation and operation. It applies to installations used to improve power factor in systems at 50 Hz or 60 Hz above 1000 V, and it treats the installation as a whole - the capacitors together with their accessories, including insulators, switchgear, series reactors, discharge devices, protection and the supporting structure - rather than as a collection of separately specified items. It does not apply to capacitor banks for induction heaters operating between 40 Hz and 24000 Hz, to series capacitors for power systems, to shunt and AC filter capacitors in HVDC systems, to installations built from self-healing capacitors, to shunt capacitors in systems of 1000 V and below, or to power filters. Shunt capacitors are the cheapest reactive power a network can buy, and the reason substations are full of them: they supply reactive current locally, so it does not have to be carried from the generator through every line and transformer in between, which raises voltage at the point of connection and releases real transmission capacity. What makes the installation rather than the capacitor the right subject for a standard is that most of the difficulty is around the capacitor: energising a capacitor bank draws a very high inrush current at a frequency far above the fundamental, unbalance protection has to detect the failure of individual internal elements before the failure cascades, discharge devices must bring a disconnected bank to a safe voltage before anyone approaches it, and a bank must never be re-energised while still charged. Issued on 24 June 2014 and in force since 22 January 2015.

This standard specifies the nominal voltage above 1000V ac power systems parallel capacitor device performance, testing, safety requirements, Providing the installation and operation guidelines. This standard applies to installations in more than 1000V nominal voltage, frequency 50Hz or 60Hz AC power system to improve power The rate factor of shunt capacitors (hereinafter referred to as the device). This standard does not apply to the capacitor means or capacitor bank.

- Capacitor bank induction heater at a frequency of 40Hz ~ 24000Hz running used;
- Series capacitors for power systems equipment;
- HVDC systems with parallel capacitors and AC filter capacitors;

- High-voltage shunt capacitors with self-healing capacitor composed of;
- Nominal voltage 1000V and below the AC power system with shunt capacitors;
- Power Filter. Capacitors and various accessory devices, such as insulators, switches, series reactor, discharge coil, surge arresters, transformers, fuses and outside Controllers shall comply with the appropriate standards. The purpose of the standard is as follows:
 - a) elaborate uniform rules on the scale, performance and test apparatus;
 - b) elaborate sorting device, the main wiring and structure;
 - c) describes a method parameter selection means;
 - d) elaborate protection device;
 - e) elaborate security rules means;
 - f) provide installation and operation guidelines.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB 311.1 insulation coordination - Part 1. Definitions, principles and rules (GB 311.1-2012, IEC 60071-1.2006, MOD)

GB/T 1094.10 Power transformers - Part 10. Determination of sound levels (GB/T 1094.10-2003, IEC 60076-10.2001, MOD)

GB 1984 high voltage AC circuit breaker (GB 1984-2003, IEC 62271-100.2001, MOD)

GB/T 2900.16 Electrotechnical terminology - Power capacitors [GB/T 2900.16-1996, neq IEC 50 (436).1990]

GB 4208 housing protection (IP Code) (GB 4208-2008, IEC 60529.2001, IDT)

GB/T 11022 high-voltage switchgear and control equipment standard common technical requirements (GB/T 11022-2011, IEC 62271-1. 2007, MOD)

GB/T 11024.1-2010 nominal voltage above 1000V ac power systems parallel capacitor - Part 1. General (IEC 60871-1.2005, MOD)

GB/T 14549 Power quality utility grid harmonic